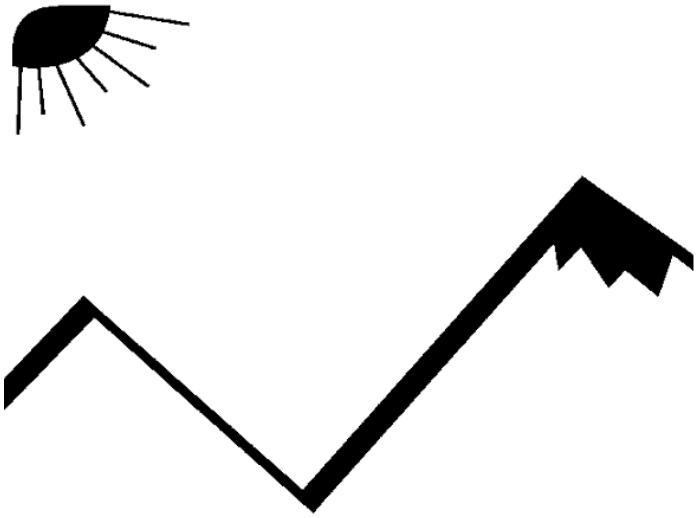
Exceptional Event Documentation

Fresno, California
August 10, 2012



San Joaquin Valley
Unified Air Pollution Control District

December 18, 2013

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Executive Summary

The analysis in this report demonstrates that the exceedance of the 1-hour ozone National Ambient Air Quality Standard (NAAQS) recorded on August 10, 2012 at the Fresno-Drummond air monitoring site was caused by emissions from an industrial accident (fire) at the Richmond Chevron oil refinery on August 6, 2012 and impacts from wildfire emissions, and therefore qualifies as an Exceptional Event under the Clean Air Act. Without the Richmond oil refinery fire and wildfire emissions, the 1-hour ozone concentration at Fresno-Drummond was expected to be substantially below the 1-hour ozone NAAQS. Additionally, while not currently considered a factor in establishing an Exceptional Event under the Clean Air Act, transboundary ozone transported from Asia also contributed to ozone concentrations at the Fresno-Drummond air monitoring site on August 10, 2012.

Strong high pressure developed over the region on August 6 and continued through the middle of August. This high caused strengthening stability, hot surface temperatures, and thermally driven wind flow. As the high built over the San Joaquin Valley Air Pollution Basin (Air Basin), emissions from the Richmond oil refinery fire and wildfire smoke were transported into the Air Basin and remained trapped, exacerbating and elevating the ozone concentrations on August 10, 2012. These emissions overwhelmed the San Joaquin Valley Air Pollution Control District's (District) rigorous control strategy and led to a 1-hour ozone concentration above the NAAQS at the Fresno-Drummond air monitoring station. The 1-hour ozone exceedance would not have occurred but for the industrial accident and wildfire exceptional event.

Table ES-1: 1-Hour Average Ozone Concentration, August 10, 2012

Site	1-Hour Concentration	AIRS #	POC #
Fresno-Drummond	127 ppb	06-019-0007-44201	1

This report meets all U.S. Environmental Protection Agency (EPA) documentation standards for Exceptional Events (see Section 1). Pursuant to federal regulations, with EPA concurrence, the August 10, 2012 1-hour ozone measurement shown in Table ES-1 would be excluded from consideration regarding the NAAQS (40 Code of Federal Regulations (CFR) 50.14(b)) and any other regulatory purposes.

Placing this Exceptional Event demonstration into a larger context, this demonstration is a component of a request currently being prepared for the U.S. EPA by the District to find the San Joaquin Valley Air Basin in attainment of the federal 1-hour ozone standard, based on ambient ozone data for the three most recent calendar years of 2011 through 2013. Making an attainment determination request of the 1-hour ozone standard consists of a number of requirements, with one being a demonstration that the number of days exceeding the standard over the most recent three-year period at each of the ozone monitoring sites in the San Joaquin Valley is no more than 3. With EPA approval of this Exceptional Event demonstration, the District will be able to meet this requirement of the attainment determination request.

Section 1: Meeting Federal Requirements for Exceptional Events

EPA's *Treatment of Data Influenced by Exceptional Events* rule (codified in 40 CFR 50) describes the requirements for exceptional events flagging and documentation. The District meets all of these procedural and documentation requirements.

1.1 Procedural Requirements

1. **Public notification that event was occurring** (*40 CFR 50.14(c)*)

   Bay Area Air Quality Management District issued multiple press releases on August 7, 9, and 23, 2012 highlighting the industrial accident (fire) at the Richmond Chevron oil refinery (see Appendix D). The San Joaquin Valley Air Pollution Control District issued a press release on August 9, 2012 at 2:30 PM PDT highlighting wildfire smoke impacts in the northern counties (San Joaquin, Stanislaus, and Merced) (see Appendix C). The U.S. Forest Service notified the public through multiple means that the Chips Fire, Bear Fire, and the Piute Complex were affecting air quality. Samples of their media releases are found in Appendix D.

2. **Place informational flag on data in the Air Quality System (AQS)** (*40 CFR 50.14(c)(2)(i)*)

   The District submits data from its air monitoring sites into AQS. Once the data is in AQS, if the District's preliminary analysis supports influence from an exceptional event, the District submits a preliminary flag into AQS. The data is not official until it undergoes more thorough quality assurance and quality control, leading to certification by May 1 of the year following the calendar year in which the data was collected (40 CFR 58.15(a)(2)). The event is not official until the exceptional event documentation is approved by EPA. An AQS report showing that the data has been flagged is in Appendix H.

3. **Notify EPA of intent to flag through submission of initial event description by July 1 of calendar year following event** (*40 CFR 50.14(c)(2)(iii)*)

   The District submitted a letter to the California Air Resources Board (CARB) on May 21, 2013 listing the day the District intended to analyze under the exceptional events policy (see Appendix A). The August 10, 2012 1-hour ozone event was included on this list. CARB then sent the District's request to EPA.

4. **Document that the public comment process was followed for event documentation** (*40 CFR 50.14(c)(3)(v)*)

   The District will conduct a 30-day public comment period on this document from December 18, 2013 through January 17, 2014. The public notice will be available in Valley newspapers and on the District website. Evidence of this notice will be submitted to EPA with the exceptional event documentation.

5. **Submit demonstration supporting exceptional event** (*40 CFR 50.14(a)(1-2)*)

   This document is intended to satisfy this requirement.

1.2 Documentation Requirements

1. **Provide evidence that the event satisfies "exceptional event" criteria set forth in 40 CFR 50.1(j)** (*40 CFR 50.14(c)(3)(iv)(A)*)

   See Sections 2 and 3 of this document.
   According to 40 CFR 50.1(j), also Clean Air Act (CAA) Section 319, an exceptional event meets all of the following criteria:

   a. Is not reasonably controllable or preventable (See Section 2 of this document)
   b. Affects air quality (See Section 3 of this document)
   c. Is caused by either (1) human activity that is unlikely to recur at a particular location or (2) a natural event (See Section 3 of this document)
   d. Is determined by EPA to be in accordance with 40 CFR 50.14 to be an exceptional event (Pending EPA concurrence upon receipt of this document)

2. **There is a clear, causal relationship between the measurement under consideration and the event** (*40 CFR 50.14(c)(3)(iv)(B)*)

   See Section 3 of this document.

3. **Provide evidence that the event is associated with a measured concentration in excess of normal, historical fluctuations** (*40 CFR 50.14(c)(3)(iv)(C)*)

   See Section 4 of this document.

4. **Provide evidence that there would have been no exceedance or violation but for the event (the "but for" test)** (*40 CFR 50.14(c)(3)(iv)(D)*)

   See Section 4 of this document.

Section 2: Air Pollutant Controls in the San Joaquin Valley

This section satisfies the following federal requirement:

- An exceptional event is one that is not reasonably controllable or preventable (*40 CFR 50.14(c)(3)(iv)(A) and 40 CFR 50.1(j)*)

While an industrial accident (Richmond Chevron oil refinery fire) and wildfires are not controllable, oxides of nitrogen (NOx) and volatile organic compound (VOC) emissions have been stringently controlled by the District in order to reduce ozone levels in the San Joaquin Valley (Valley). The District's air pollution controls are recognized as some of the toughest in the nation. Some of the notable rules among the District's NOx and VOC control strategies include:

- Rule 4103 (Open Burning), which prohibits the burning of most agricultural waste materials and severely restricts the burning of the non-prohibited material, in conjunction with the District's Smoke Management Program.
- Rule 4106 (Prescribed Burning and Hazard Reduction Burning), which assures that the controlled burning of forest and rangeland residue in the District's foothills and mountains is conducted in a way to prevent air quality problems.
- Rule 4306 (Boilers, Steam Generators, and Process Heaters—Phase 3) and Rule 4320 (Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr), which enforce stringent NOx emission limits for boilers, steam generators, and process heaters with a rated heat input capacity greater than 5.0 MMBtu/hr.
- Rule 4566 (Organic Material Composting Operations), which controls VOC emissions from facilities that compost and/or stockpile organic material through an innovative menu-style control approach.
- Rule 4570 (Confined Animal Facilities), which provides a comprehensive set of regulatory mitigation measures designed to reduce VOC emissions from the various areas of confined animal facilities, such as the housing and manure management systems.
- Rule 4702 (Internal Combustion Engines), which enforces stringent NOx and VOC emission limits for internal combustion engines.
- Rule 4703 (Stationary Gas Turbines), which enforces stringent NOx emission limits for stationary gas turbines.

In response to the District's *2007 Ozone Plan*, *2009 RACT Demonstration for Ozone State Implementation Plans* (*2009 RACT SIP*), and related rule amending projects, EPA has issued federal actions documenting its approval of District rules and its concurrence that District rules are at least as stringent as reasonably available control technology (RACT) levels. Recognizing the stringency and effectiveness of the District's NOx and VOC control measures, EPA has acknowledged that many District rules are more stringent than established RACT standards and meet best available control technology (BACT) requirements. The continued RACT status of District rules was recently confirmed by the extensive analyses performed under the District's *2012 PM2.5 Plan* and *2013 Plan for the Revoked 1-Hour Ozone Standard*. In addition, NOx and VOC precursors continue to be further controlled in the Valley through the District's ongoing planning and regulatory efforts, including the *2007 Ozone Plan*, *2008 PM2.5 Plan*, *2012 PM2.5 Plan*, *2013 Plan for the Revoked 1-Hour Ozone Standard*, and the resulting control measures.

The District's RACT rules and other control measures have significantly reduced ambient ozone concentrations and allowed the San Joaquin Valley Air Basin to achieve zero 1-hour ozone violations in 2013 for the first time in recorded history. The District's RACT and BACT-level pollution controls are designed for the typical range of climate conditions in the Valley. For an exceptional event to overwhelm these controls, the characteristics of the event - by definition - must be outside the norm. Since the District's controls are considered to be at least RACT and BACT in many instances, and because the controls were in place at the time, the industrial accident and wildfire impacts experienced on August 10, 2012 were clearly not reasonably controllable or preventable.

Human activities that generated NOx and VOC emissions were approximately constant before, during and after the August 10, 2012 exceptional event, indicating that the sudden increase in ozone concentrations was not driven by normal anthropogenic emissions. Based on a survey of the available information, there is no evidence of unusual anthropogenic emissions on August 10, 2012.

Pursuant to District Rule 4103, 4106, and the District's Smoke Management Program, agricultural, prescribed, and hazard reduction burning was not authorized in the San Joaquin Valley on August 10, 2012.

Additionally, a summary of the District's compliance inspections from August 6 to August 10, 2012 is shown in Appendix E, which demonstrates that routine inspections were being conducted during the period, rules were being enforced, and that no significant breakdowns or variances occurred.

Section 3: Ozone Concentrations were Caused by an Industrial Accident (Richmond Oil Refinery Fire) and Wildfire Exceptional Event

This section satisfies the following federal requirements:

- The event was caused by human activity that is unlikely to recur at a particular location or a natural event (*40 CFR 50.14(c)(3)(iv)(A) and 40 CFR 50.1(j),*
- The event affected air quality (*40 CFR 50.14(c)(3)(iv)(A) and 40 CFR 50.1(j),*
- There is a clear, causal relationship between the measurement under consideration and the event (*40 CFR 50.14(c)(3)(iv)(B)*)

During the evening of August 6, 2012, a fire erupted at the Richmond oil refinery, with smoke billowing into the atmosphere. The Richmond oil refinery fire caused a "shelter in place" to be ordered for communities surrounding the fire. Bay Area Air Quality Management District and the California Air Resources Board performed additional air quality monitoring to identify the magnitude of the impact from the oil refinery fire emissions. Transport winds then carried these emissions into the San Joaquin Valley Air Basin. Poor dispersion conditions persisting until August 10th causing the emissions to remain trapped in the Valley.

In addition, several wildfires were occurring around California during the days preceding the 1-hour ozone exceedance at Fresno-Drummond on August 10, 2012. Among the wildfires were the Bear and Piute Complex which were adjacent to the San Joaquin Valley, and the Chips Fire which was adjacent to the Sacramento Valley. Surface and transport winds carried the smoke from these fires into the San Joaquin Valley Air Basin where it later contributed to ozone formation.

Figure 1 shows the location of the Richmond oil refinery fire and wildfires that were occurring between August 6 and 9, 2012. As shown in Figure 1, the San Joaquin Valley is a distinct inter-mountain valley in Central California, oriented southeast to northwest, with the slightly higher end of the valley closer to Los Angeles and the low end at the Sacramento-San Joaquin River Delta near San Francisco. The Valley is bounded by the Sierra Nevada range to the east, the Temblor and Coastal ranges to the west and the Tehachapi and San Emigdio ranges to the south. The floor of the San Joaquin Valley is approximately 200 miles long and 80 miles wide on average.

Figure 1: Location of the Chevron oil refinery industrial accident and wildfires that were occurring in California between August 6 and 9, 2012.

3.1. An Exceptional Event Occurred on August 10, 2012

With proper documentation and EPA concurrence, data influenced by exceptional events like wildfires can be excluded from official attainment demonstration calculations. Such documentation is extensive and requires significant District resources. Since exceptional events are not reasonably preventable or controllable, it is inappropriate to use data influenced by these events without recognition of these circumstances.

EPA generally reviews only those requests that will directly affect an area's attainment status. Although not every event results in a formal submittal to EPA, the District tracks these events and their impact on attainment as part of its ongoing air quality analysis. These ongoing efforts

help the District more accurately characterize ambient ozone concentrations and attainment progress.

There are many sources of documentation that may be used to establish an exceptional event:

- Meteorological data (e.g., wind speed and wind direction to support a source receptor relationship)
- Modeling and receptor analysis
- Videos and/or photographs of the event and the resulting emissions
- Maps of the areas showing sources of emissions and the area affected by the event
- Media accounts of the event

On August 7, 9 and 23, 2012, the Bay Area Air Quality Management District issued Press Releases addressing the impacts of the oil refinery fire on the public (Appendix D). On August 9, 2012, the District received several reports of ground level smoke being observed in San Joaquin County from the Chips Fire that was burning in northern California. The District subsequently issued a Press Release addressing these impacts so the public could take protective actions (Appendix C).

Transport flow carried emissions from the refinery fire into the Valley on August 6, 2012, as demonstrated in Section 3.2.1. In addition, northwesterly winds carried and transported smoke emissions from the Chips Fire to Fresno from San Joaquin County. Further analysis of the trajectory of this plume is illustrated in Section 3.3.5. Furthermore, emissions from the Bear Fire were transported to Fresno by easterly winds and emissions from the Piute Complex were transported to Fresno by southeasterly winds. The added emission burden from the refinery fire and wildfires led to the 1-hour ozone concentration at Fresno-Drummond exceeding the NAAQS between 12:00 PM PST and 1:00 PM PST on August 10, 2012.

Table 3-1 shows the 1-hour maximum ozone concentration by site by day for select Fresno County monitors. 1-hour ozone began to climb under the transport of wildfire emissions into the Air Basin. Once the wildfire emissions passed the Fresno-Drummond air monitoring station, the 1-hour ozone concentrations began to decline by August 12. Monsoonal moisture (cloudy conditions) moved over central California on August 12 also playing a role in reducing ozone formation rates by blocking sunlight. These clouds rapidly moved away on August 13 leading to clear skies and optimum ozone forming conditions. Meteorological conditions similar to those on the exceedance day (strong stability and light winds) prevailed on August 13. However, ozone concentrations were significantly lower on August 13 further illustrating that a plume of wildfire emissions caused the elevated measurements on August 10. This pollution wave will be discussed further in Section 3.3.4.

Table 3-1: Maximum 1-Hour Ozone (ppb) by Site by Day in Fresno County.

Date	Fresno-SSP	Fresno-Garland	Clovis	Fresno-Drummond	Parlier
8/5/2012	61	70.4	68	72	76.6
8/6/2012	62	75.1	87	72	90.6
8/7/2012	63	81.3	85	79	87.5
8/8/2012	77	98.6	98	96	99.7
8/9/2012	88	111.2	119	108	98
8/10/2012	100	117.9	115	127	117.7
8/11/2012	102	118.5	114	124	102
8/12/2012	92	93.7	104	89	77.6
8/13/2012	79	87.3	107	85	82
8/14/2012	72	79	85	83	87

3.1.1 Meteorological Analysis

A strong high pressure pattern developed over the region on August 6 and continued through the middle of August. This high caused strong stability, hot surface temperatures, and thermally driven wind flow. Table 3-2 shows the increase in Fresno's maximum temperature during the days preceding the 1-hour ozone exceedance. The daily maximum temperature at Fresno was above 105 degrees Fahrenheit before and after the event, reflecting that the strong high pressure system was established and constant throughout this time period.

Table 3-2: Increase in Daily Maximum Temperature (in Fahrenheit).

August, 2012	5	6	7	8	9	10	11	12	13	14
Fresno	99	101	102	103	107	109	111	105	110	109

The upper level charts on August 10 showed a strong high over the Four Corners Region, with a ridge extending westward into southern California. A weak trough was draped along the northwestern California Coastline.

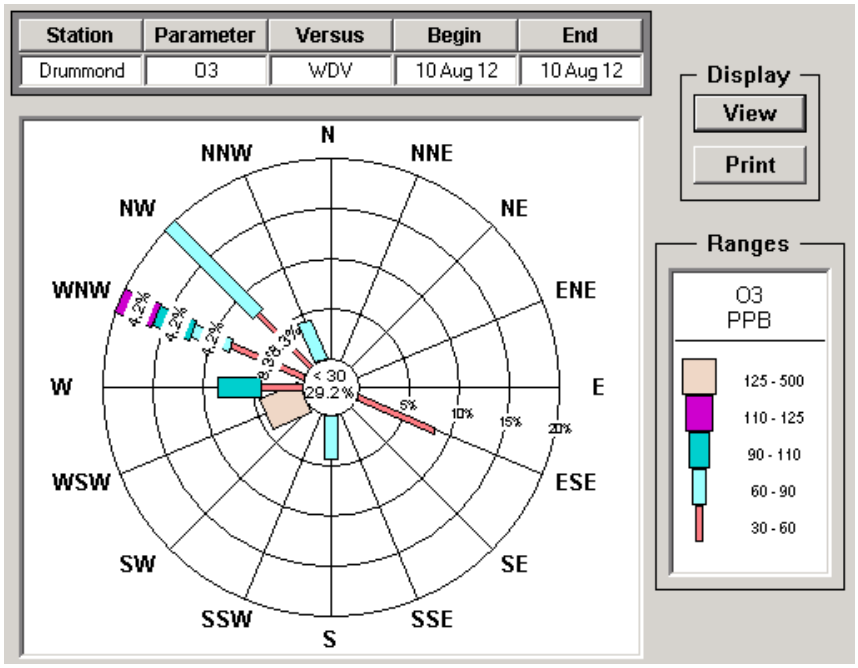
The morning surface chart on August 10 indicated strong highs positioned over the Four Corners Region and 750 nautical miles (NM) west of Seattle. A thermal low near Las Vegas had an inverted trough curving northwestward to another thermal low near Modesto. This high pressure pattern caused thermally driven wind flow and a very strong surface based morning inversion in the Valley.

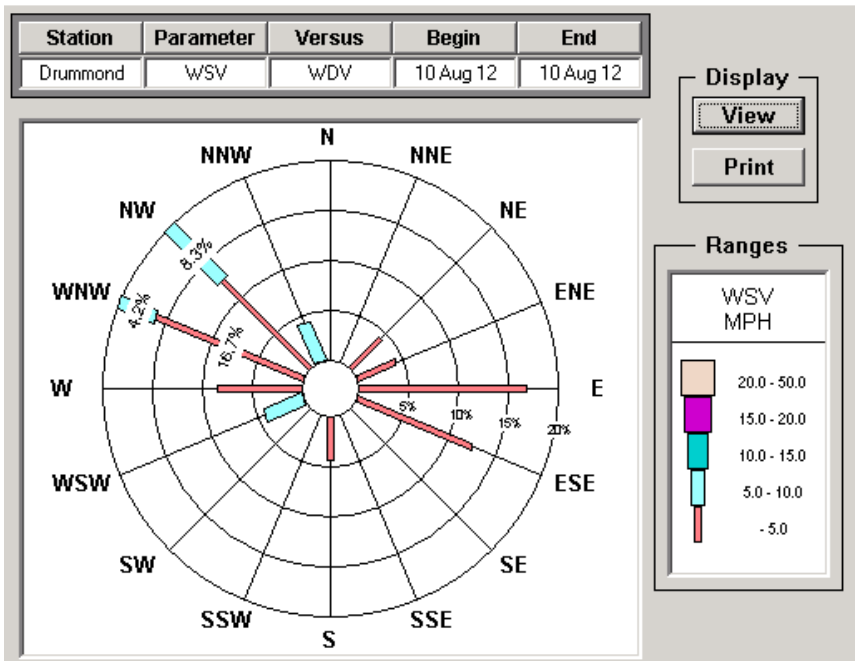
The morning aircraft sounding from Fresno depicted a strong inversion of 15 degrees Fahrenheit from the surface up to 2,000 feet. The lower air profiler from Visalia that afternoon showed light westerly wind flow up to 3,000 feet becoming northwesterly then northerly above.

Figure 2 shows the pollution rose (top) and the wind rose (bottom) from Fresno – Drummond on August 10. The pollution rose illustrated that the 1-hour ozone concentration of 127 parts per billion (ppb) came from the west-southwesterly quadrant, as depicted by the color beige. The wind rose showed that the predominant wind flow pattern for the day was from the east to southeast during the morning hours; then switched from the southwest to northwest during the

afternoon hours. This diurnally driven wind flow pattern is typical during strong high pressure stagnant weather events.

Figure 2: Fresno-Drummond Ozone and Wind Roses for August 10, 2012.



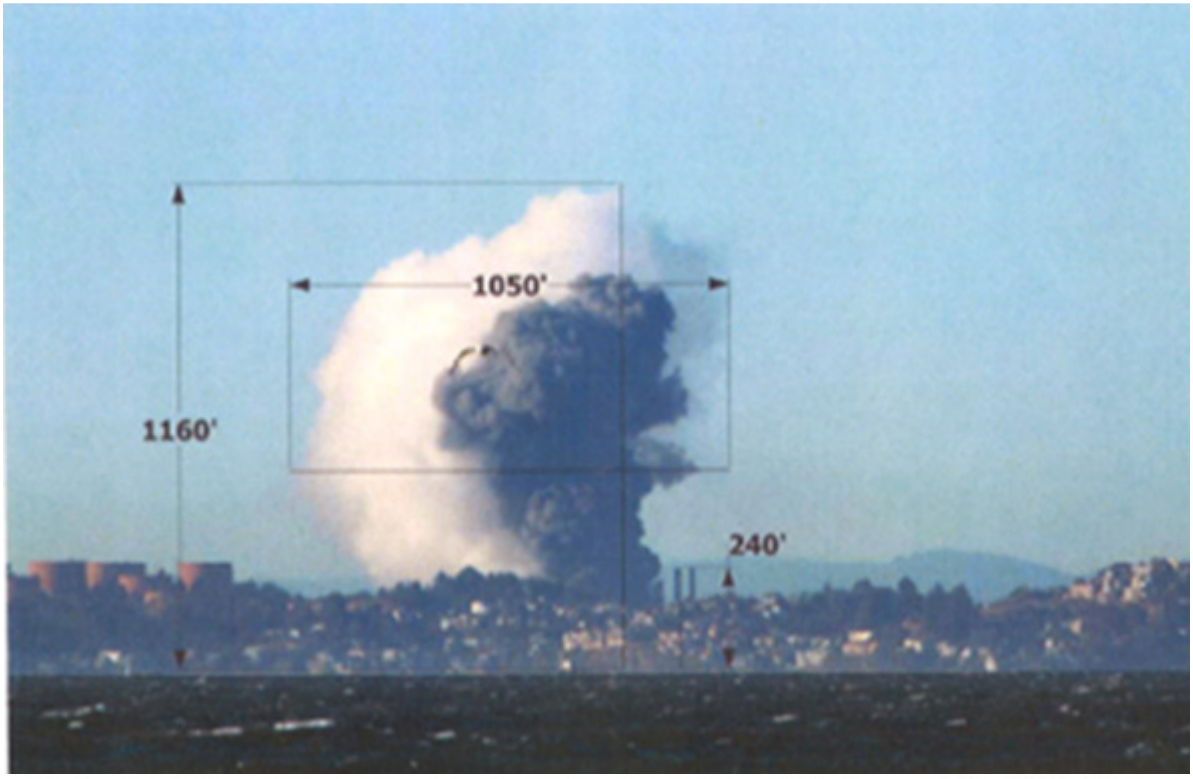


3.2 Industrial Accident Emissions Infiltrated the Valley and Affected Air Quality

A fire erupted on the evening of August 6, 2012 at the Richmond oil refinery, with smoke billowing into the atmosphere. Transport winds then carried these emissions into the San Joaquin Valley Air Basin. Strong high pressure persisted over the region until August 10th causing the emissions to remain trapped in the Valley.

Figure 3 from Chevron's *Seventh Update to the 30-Day Report for the CWS Level 3 Event of August 6, 2012,* shows the oil refinery plume on the day of the event. A forward trajectory showing the plume from the industrial accident reaching the San Joaquin Valley Air Basin is provided in Section 3.2.1.

Figure 3: Richmond Chevron Oil Refinery smoke plume on August 6, 2012.



Estimated size of the white cloud utilizing a photograph taken at Pier 39 in San Francisco. The 240 foot dimension shows the height of the 4CU furnace stacks

3.2.1 Source – Receptor Analysis: Forward Trajectory

The District also analyzed this exceptional event using forward trajectory analysis. For the August 10, 2012 event, Figure 4 is a forward trajectory showing that the emissions produced from the industrial accident (fire) at the Richmond oil refinery on August 6, 2012 was carried to the receptor (impacted) location.

Figure 4: Forward Trajectories from the Richmond oil refinery industrial accident at 75 (red), 100 (blue), and 125 (yellow) meters on August 06, 2012.

Start Time: 6:00 PM PST on August 6, Run Time 18 hours

Figure 4 shows the trajectory starting at the Richmond oil refinery fire at 6:00 PM PST on August 6, 2012 with a runtime of 18 hours. Trajectory heights are at 75 meters in red, 100 meters in blue, and 125 meters in yellow. These trajectories show that the air parcel from the Richmond industrial accident reached the monitored area within 18 hours (12:00 PM PST) at the 100 and 250 meter height levels.

3.3 Wildfire Emissions Infiltrated the Valley and Affected Air Quality

Among many wildfires that were burning in California between August 6 and 9, 2012, three of the fires, the Chips, Bear, and Piute Complex contributed to the exceedance that occurred at the Fresno-Drummond air monitoring station. Figure 5 shows smoke from the three fires. The infiltration, dispersal, and diffusion of wildfire emissions as ozone precursors contributed to ozone formation and subsequently the exceedance that occurred at the Fresno-Drummond monitor on August 10, 2012.

Figure 5: Chips Fire in Plumas County (top), Bear Fire in Fresno County (bottom left), and Piute Complex in Kern County (bottom right).

3.3.1 Emissions from the Chips Fire

Figures 6 and 7 depict satellite imagery of smoke emissions from the Chips Fire in northern California infiltrating into the Sacramento Valley on August 3 and 4, 2012. Wind observations confirm that the smoke was sent into the Sacramento Valley by overnight downslope flow. This smoke then became entrained in the wind circulation patterns of the Sacramento Valley which then carried it southward toward San Joaquin County (see Appendix F).

Figure 6: Smoke from Chips Fire on August 3, 2012.

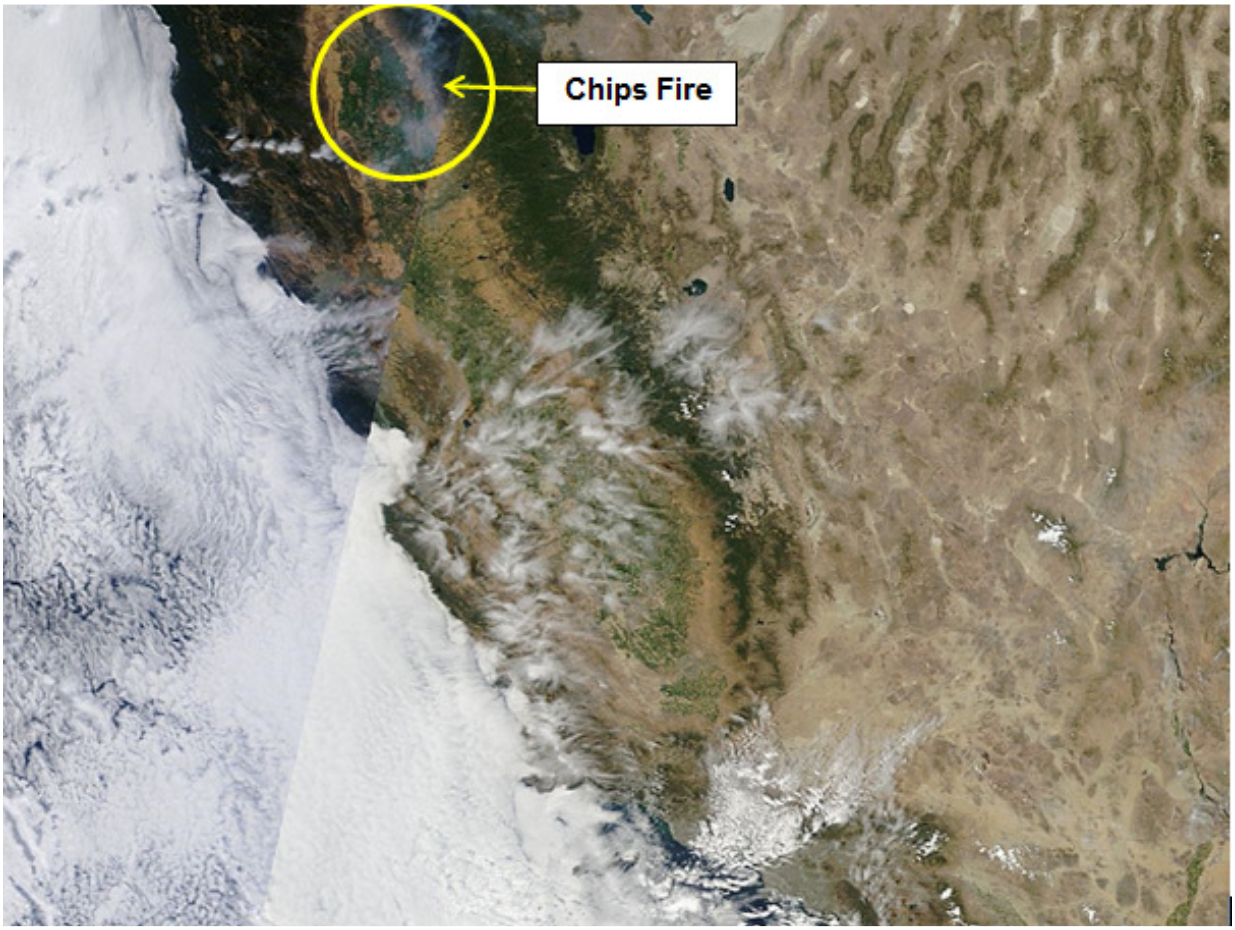
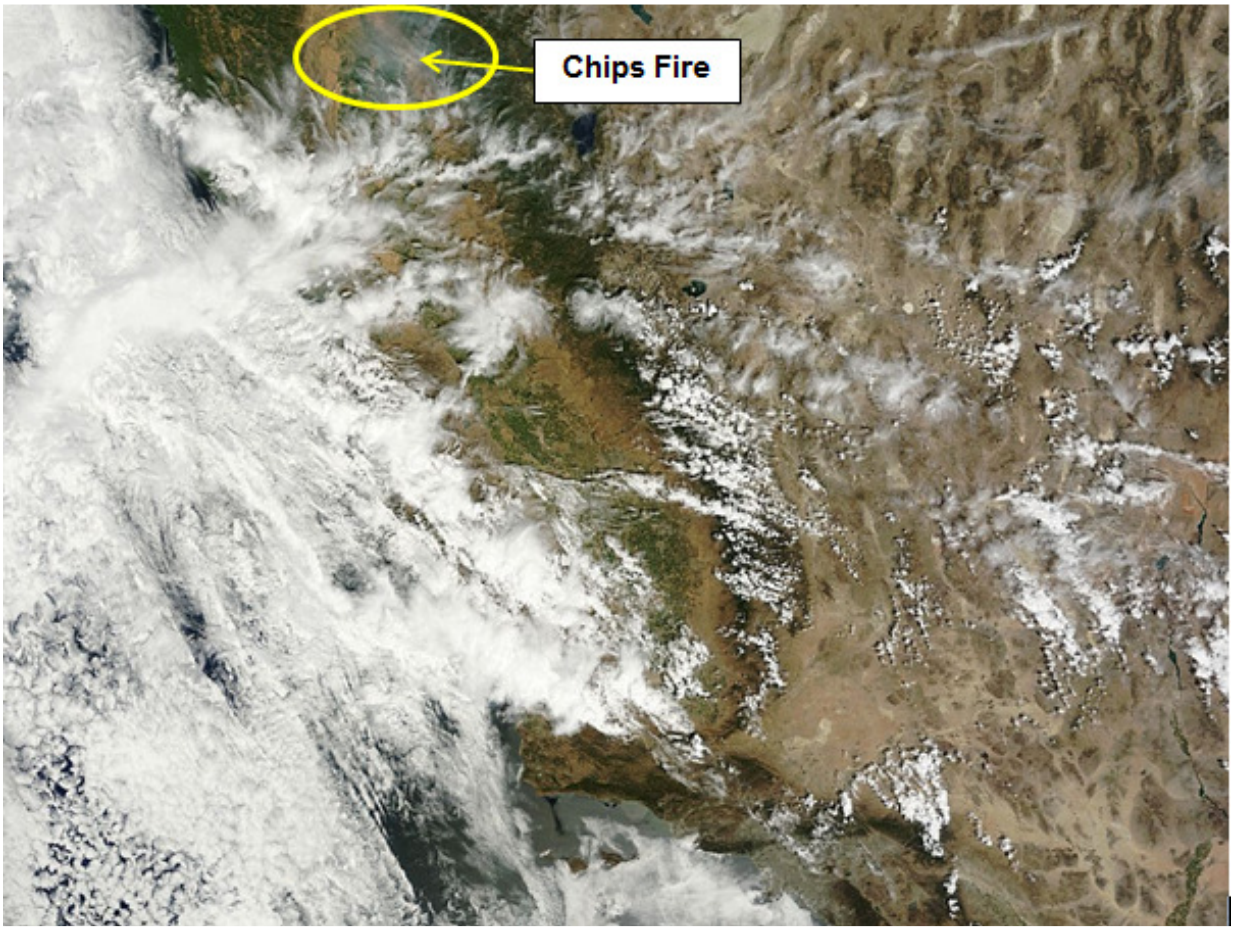


Figure 7: Smoke from Chips Fire on August 4, 2012.



Figures 8a-8c shows smoke detected by satellite imagery of fires in California on August 6, 8, and 9, 2012. Figure 8a shows smoke impacting the District from the Piute Complex and the Bear Fire on August 6, 2012. Figures 8b and 8c depicts smoke impacting the District from the Chips Fire, with layers of smoke from this fire extending southward over the Sacramento Valley toward the San Joaquin Valley on August 8 and 9, 2012.

Figure 8a: Smoke plume impacting the San Joaquin Valley from the Piute Complex and Bear Fires on August 6, 2012.

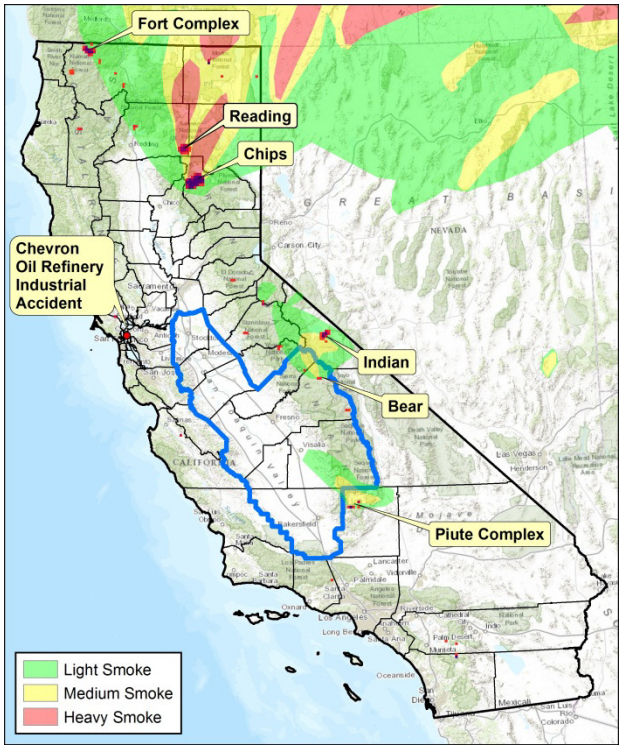


Figure 8b: Smoke plume impacting the San Joaquin Valley from the Chips and Bear Fires on August 8, 2012.

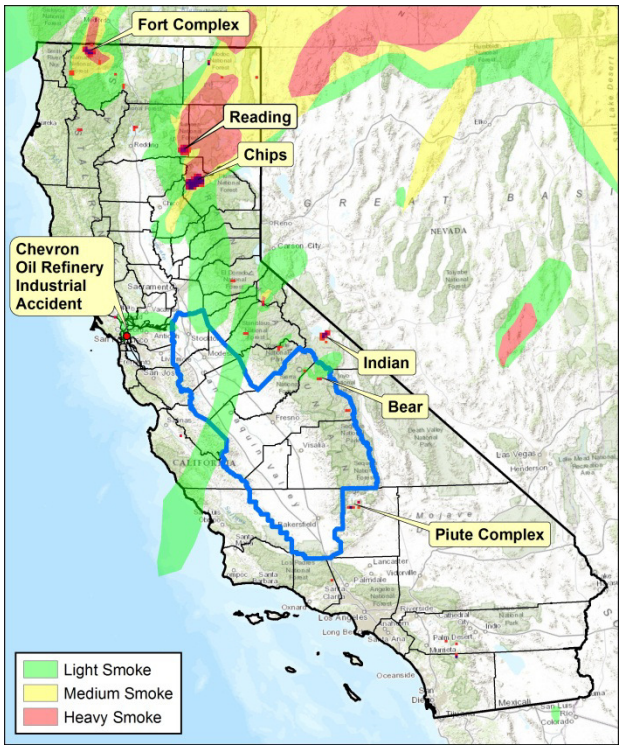
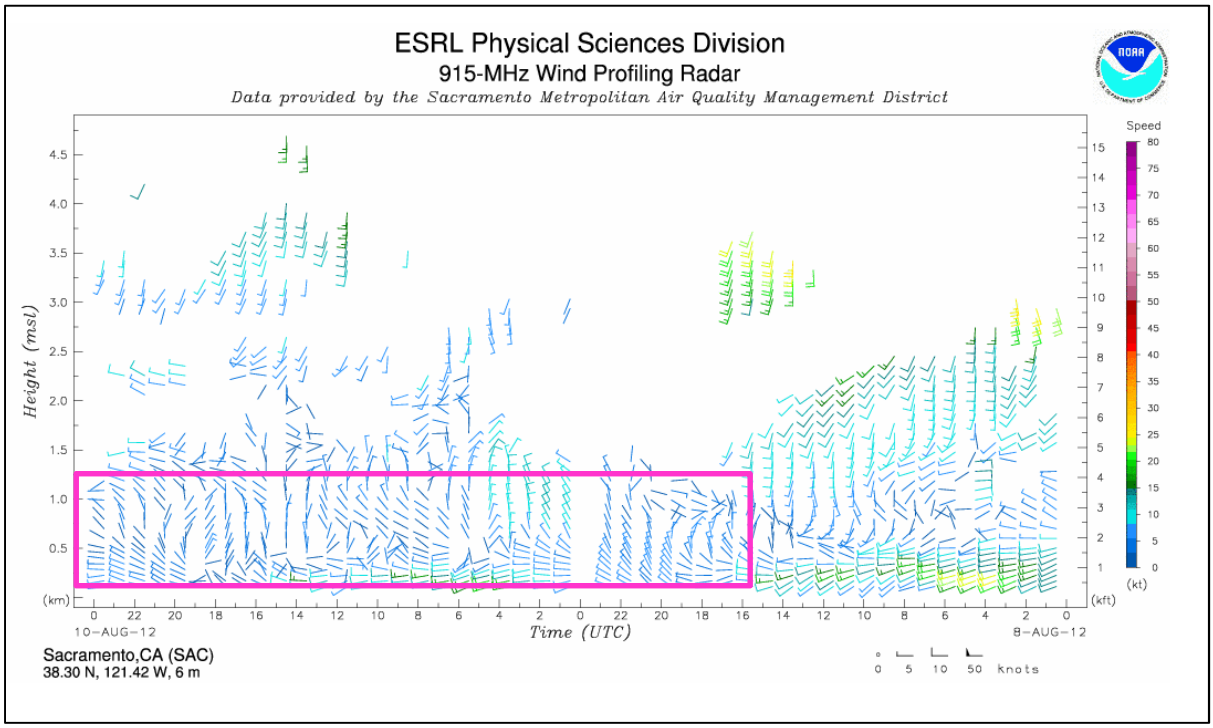


Figure 8c: Smoke plume impacting the San Joaquin Valley from the Chips Fire on August 9, 2012.

The lower air profiler shown below in Figure 9 indicates that north to northwesterly wind flow was present above Sacramento on August 8 and 9. These winds sent the smoke further south into San Joaquin County where smoke impacts were later reported. Accordingly, the District issued a press release on August 9 for smoke impacts in the northern San Joaquin Valley.

Figure 9: Sacramento Lower Air Profiler.



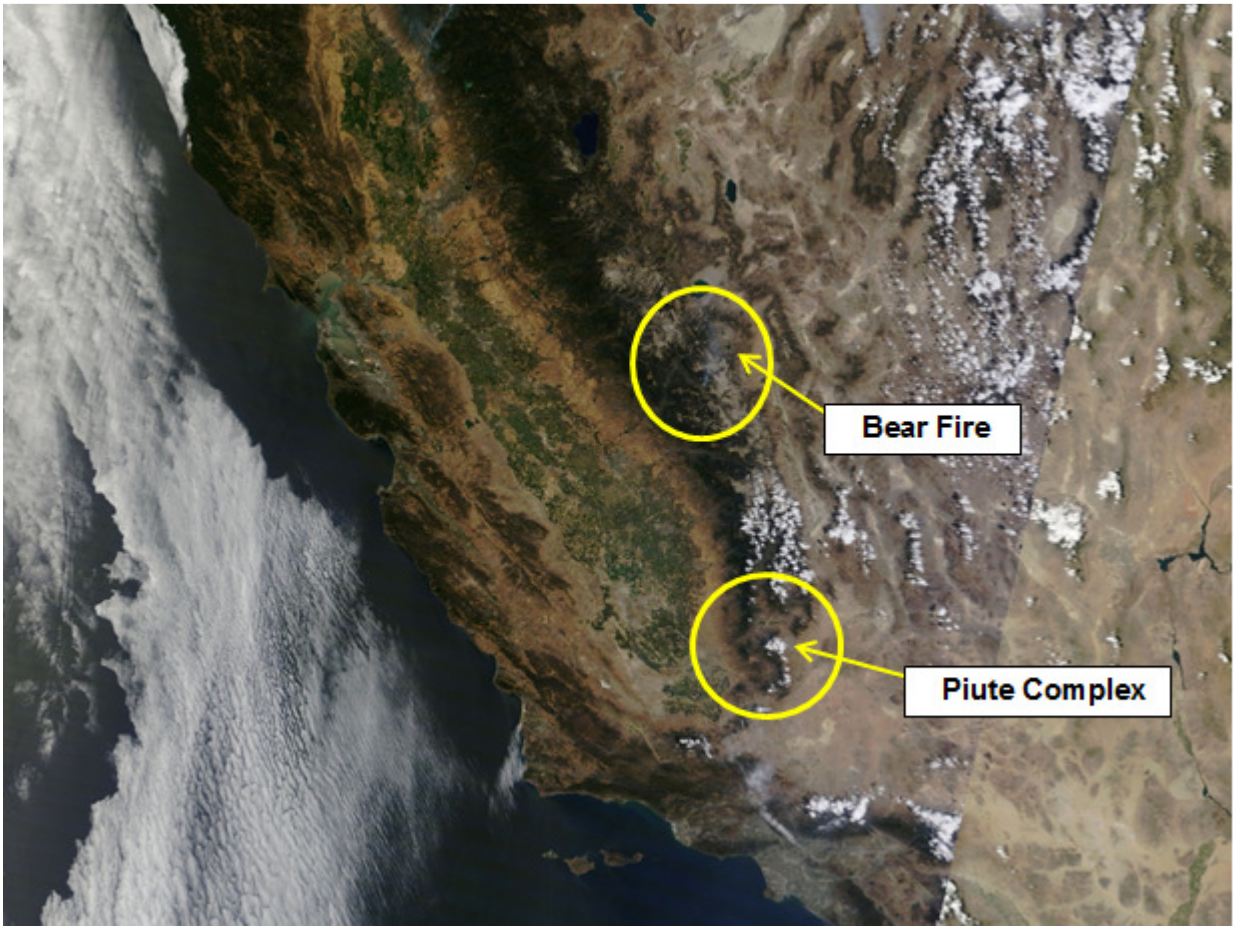
3.3.2 Emissions from the Bear Fire and Piute Complex

Wildfire emissions from the Bear Fire in Fresno County and the Piute Complex in Kern County (Figure 10) also infiltrated the San Joaquin Valley Air Basin during the August 4 through August 9 time period. During the afternoon hours, easterly transport winds over the Bear Fire helped direct wildfire emissions toward Fresno; in addition during the overnight hours, drainage flow over the Bear Fire sent wildfire emissions down the San Joaquin drainage toward Fresno.

In Kern County, emissions from the Piute Complex were ushered into the San Joaquin Valley via overnight downslope flow. The wildfire emissions then became entrained in a southeasterly nocturnal wind flow pattern which carried the plume northwestward from Kern County to Fresno.

The wind observations described above are provided in Appendix F.

Figure 10: Smoke from the Bear Fire and Piute Complex on August 7, 2012.



3.3.3 The Impact of Wildfire Smoke Emissions on Ozone Concentrations

Particulates and ozone precursors are emitted into the atmosphere by wildfires, and are then carried away by the wind. Although particulates in the smoke plume can slightly reduce ozone

formation rates by blocking sunlight, the precursors still have the potential to react and form ozone.

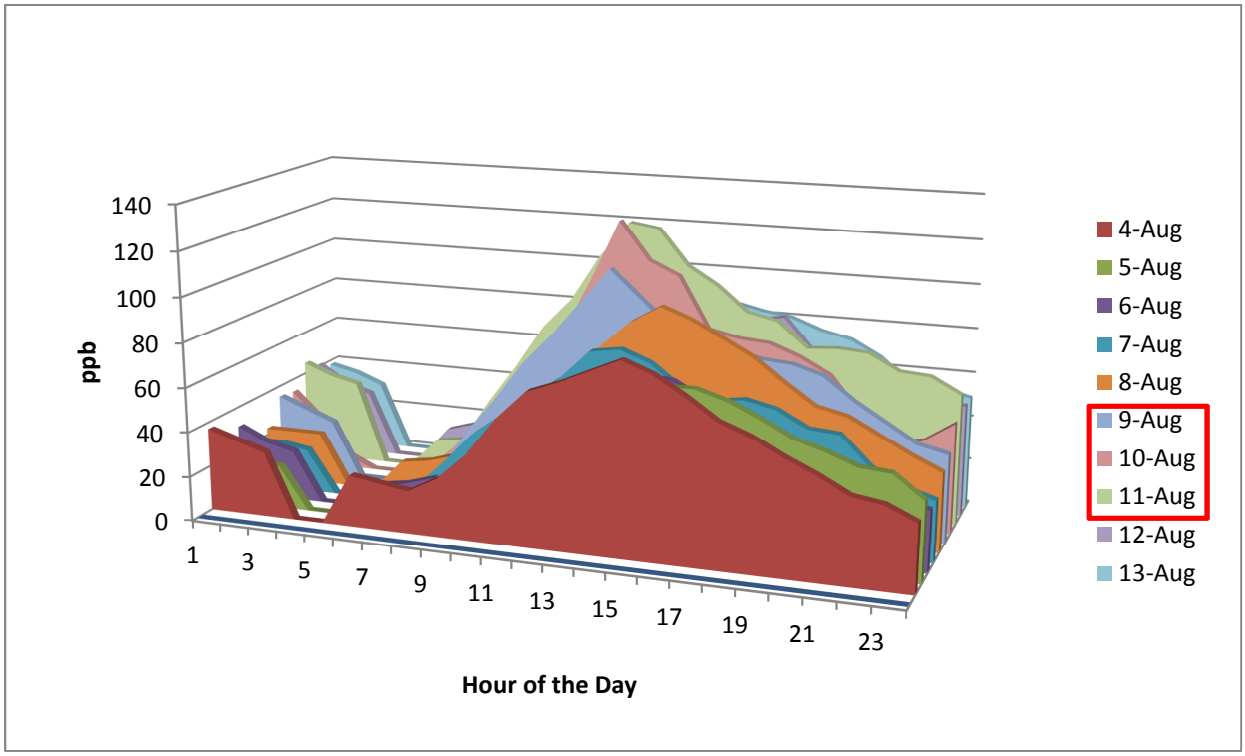
Wildfires have been linked to increased ozone concentrations in the Valley. For example, in 2008 California experienced a record number of wildfires: a total of 6,255 fires burned 1,593,690 acres. The resulting emissions caused serious public health impacts and unprecedented levels of particulate matter and ozone in the Valley and other regions throughout the state. Historically clean rural areas experienced their worst air quality in decades. Throughout the Valley, pollutant levels and the number of daily exceedances of the health-based standards in 2008 were significantly higher than in other recent years.

3.3.4 Ozone Movement through the Valley

The Fresno-Drummond 1-hour ozone exceedance that occurred between 12:00 PM PST and 1:00 PM PST (noon) on August 10, 2012 was preceded and followed by unusually high ozone values the day before and the day after, with each day's measured peak values occurring at 12:00 PM PST and 1:00 PM PST (Figure 11).

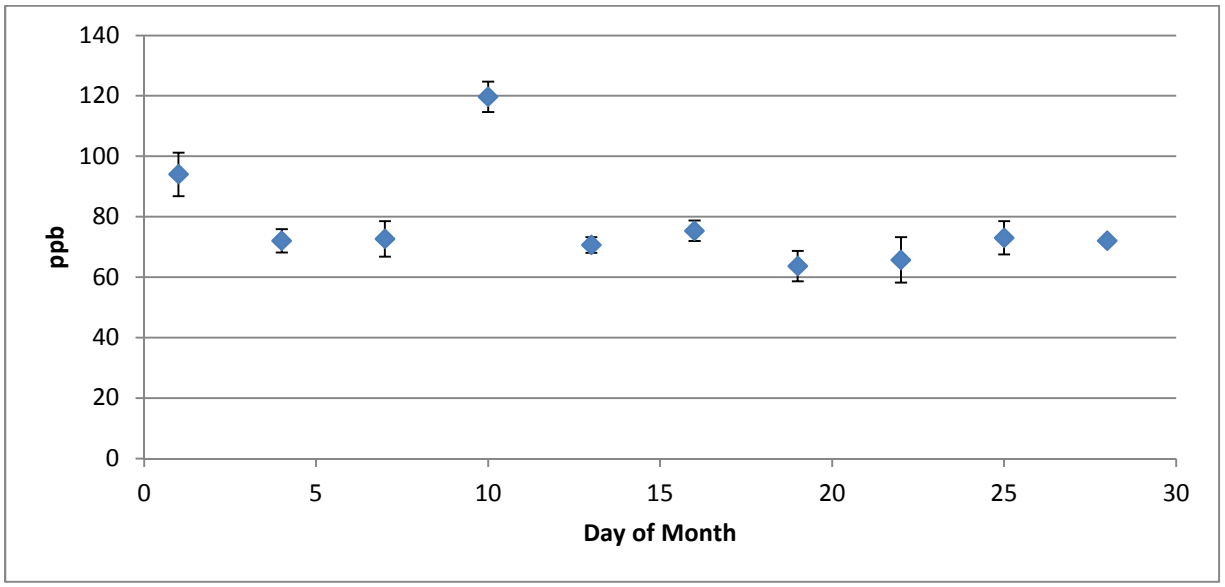
As exemplified in Figure 11, initial examination of the data shows the diurnal pattern for ten contiguous days, using August 10th as the fulcrum with six days preceding the 10th and 3 days following the 10th. The diurnal pattern shows August 9th, 10th, and 11th as having a steep morning incline, with the measured values peaking early in the day, as well as having a much higher measured ozone value in comparison to the days preceding and following them.

Figure 11: Fresno-Drummond diurnal ozone profile from August 4 through August 13, 2012.



To examine the data more fully, the three days with the high values that peaked at the noon hour were summed and averaged (to reduce variance and clarify differences). Averaging the August 9th, 10th, and 11th noon values into one number and using the mean date (August 10th) as a fulcrum, the preceding and following days were also averaged from groups of three days (for the noon hour values) throughout the month of August providing ten data point values for the month (the first data point includes the last day of July to maintain the three day grouping. These ten averaged data points were then plotted with the results showing a signature pattern (Figure 12).

Figure 12: Fresno-Drummond, August 2012 12:00 PM Ozone Concentrations (ppb) 3-Day Averages.



Because of the unique signature apparent in Figure 12, a search of nearby sites was undertaken to see if this pattern occurred elsewhere. It was discovered that this pattern had occurred at a number of other monitoring sites to the northwest and to the southeast of the Fresno-Drummond site, with the peak hour of the three day average occurring in chronological succession from northwest to southeast beginning in the morning of August 10, 2012 (see Table 3-3).

Table 3-3: Peak Hour of the Three Day Average 1-hour Ozone Concentration Occurring at Select Sites.

Sites (NW to SE)	Date (August 2012)	Peak Hour of the 3-Day Average (PST)
Madera-City	10th	11:00 AM
Fresno-Drummond	10th	12:00 PM
Clovis	10th	1:00 PM
Parlier	10th	2:00 PM
Visalia	10th	5:00 PM

This data shows that three diurnal waves of ozone (or its precursors) had peak concentrations occurring at the same location at nearly the same time each day, providing evidence of a diurnal plume moving through the area for the three days in question.

3.3.5 Source – Receptor Analysis: Backward Trajectory

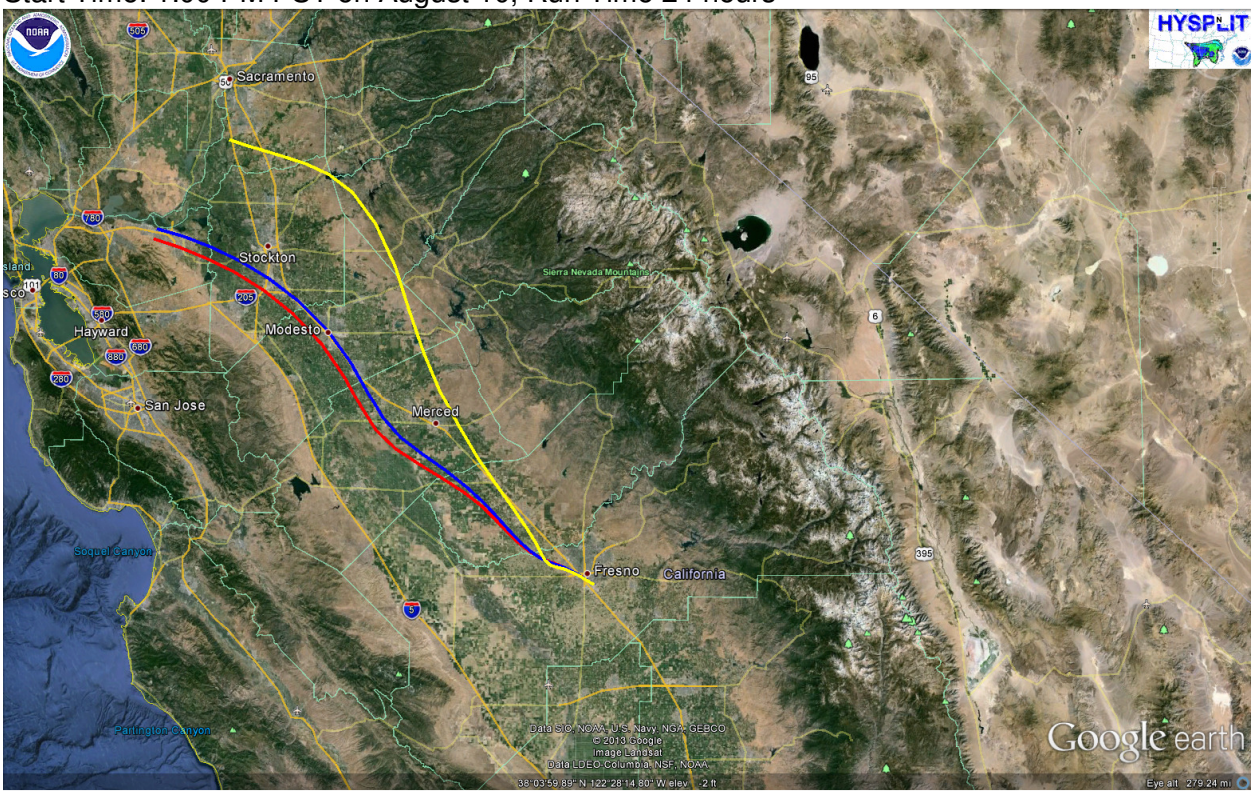
The District ran the National Oceanic and Atmospheric Administration (NOAA) Hybrid Single-Particle Lagrangian Integrated Trajectory (HYSPLIT) model for the natural event to identify air parcel source regions that contributed to the peak 1-hour ozone concentration in Fresno. HYSPLIT can compute air parcel trajectories and dispersion based on meteorological observation data files from the National Weather Service's National Centers for Environmental Prediction (NCEP). The model and full documentation are available at www.arl.noaa.gov/ready/hysplit4.html.

The District used the HYSPLIT model run to simulate the flow field for air parcels that arrived in Fresno at the time when the 1-hour ozone concentration exceeded the NAAQS. The back-trajectory was used to determine where these air fields were coming from.

The modeling and observations show that the winds originated north-northwest of Fresno-Drummond. The model trajectory analysis takes the air parcel south-southeastward toward Fresno, leading to the elevated 1-hour ozone observation at the Fresno-Drummond air monitoring site. The backward trajectory analysis below shows that the wildfire emissions observed in the northern San Joaquin Valley on August 9, 2012 would have reached Fresno-Drummond during the exceedance hour (Figure 13).

Figure 13: Backward trajectory showing location of air mass arriving at the 10 (red), 25 (blue), and 100 (yellow) meters above ground level at Fresno-Drummond around 1:00 PM PST on August 10, 2012.

Start Time: 1:00 PM PST on August 10, Run Time 24 hours



The main source region for air arriving in Fresno during the 1-hour ozone exceedance recorded between 12:00 PM and 1:00 PM PST on August 10, 2012 (see Figures 14 through 17) came from the northwest (southern Sacramento and northern San Joaquin Valley); dots on the images indicate air parcel movement). According to the HYSPLIT model runs (Figures 14-17), smoke emissions in the northern San Joaquin Valley on August 9, 2012 had an opportunity to be transported southeastward toward the Fresno-Drummond site on August 10. The following model runs were used to identify over incremental past time periods the source of air that impacted the Fresno area on August 10, 2012. The following figures show the progression of the source region going back in time in 12 hour increments from August 8 to August 10, 2012.

Figure 14: Location of air mass between 1:00 AM PST (August 10) and 1:00 PM PST (August 10) arriving in Fresno at 1:00 PM PST on August 10, 2012.

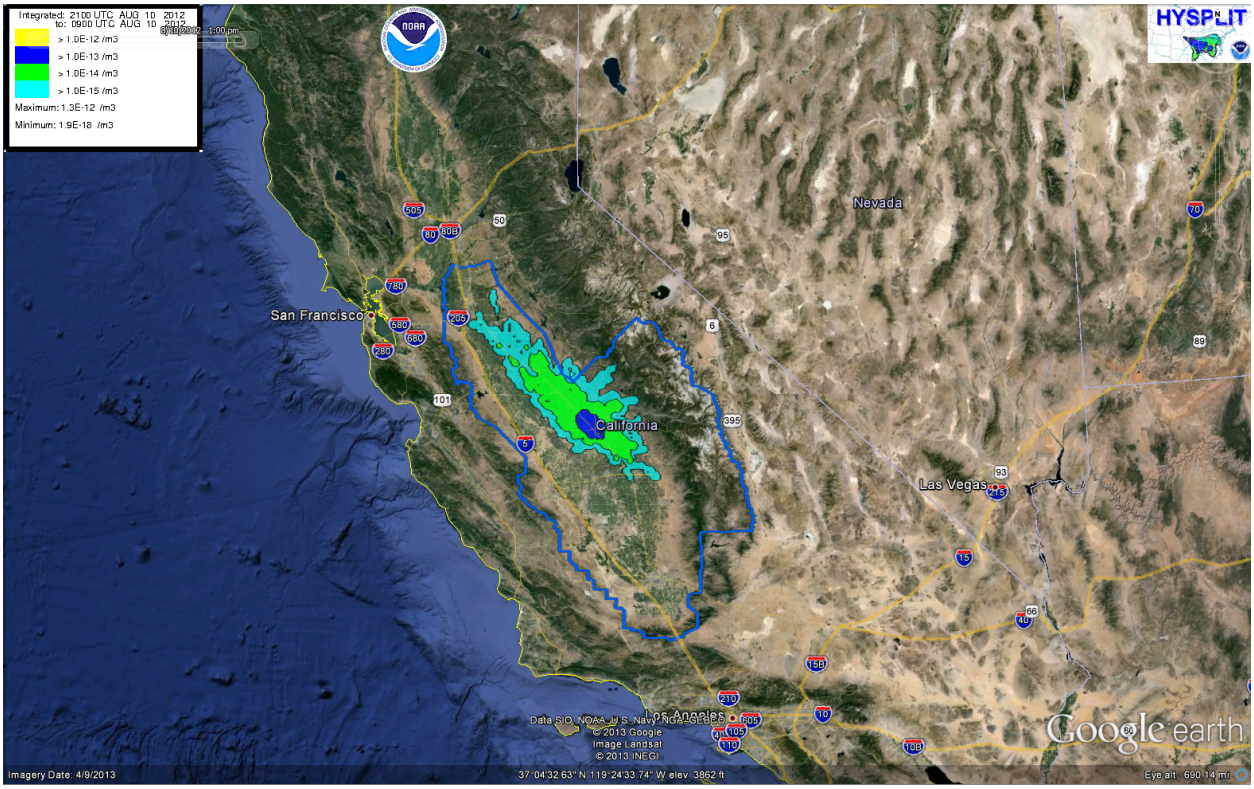
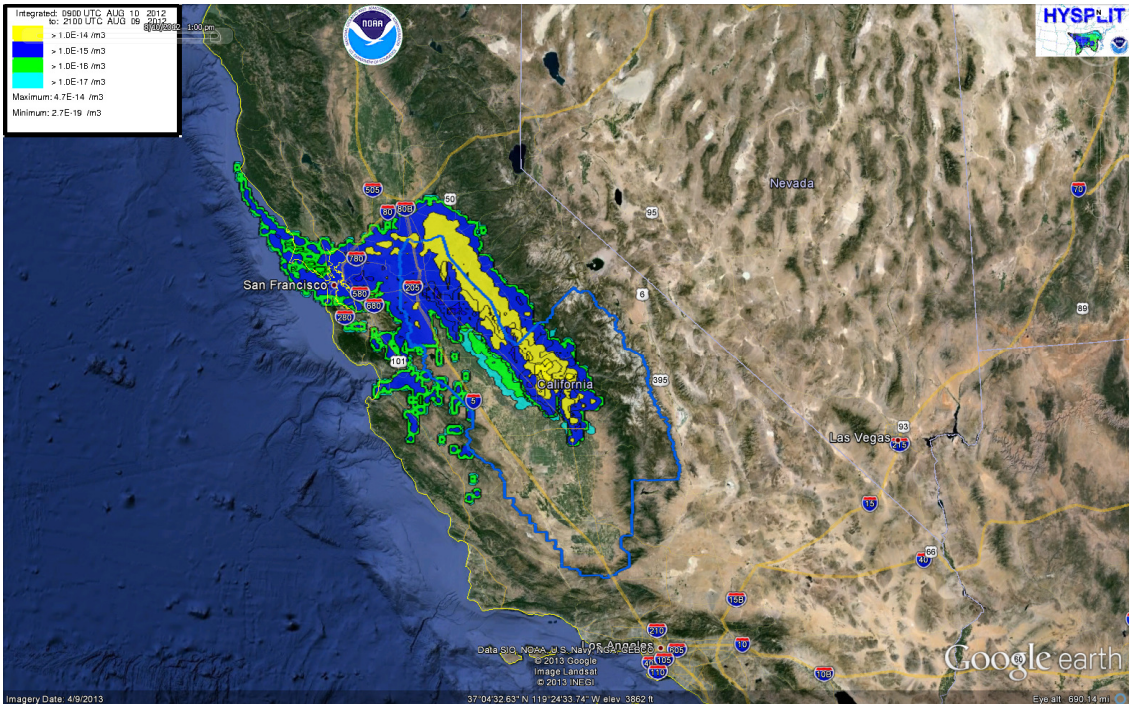


Figure 14 shows the location of the air mass between 1:00 AM PST and 1:00 PM PST in Fresno, Madera, Stanislaus, and parts of San Joaquin Counties. This air mass would later arrive at Fresno during the exceedance hour.

Figure 15: Location of air mass between 1:00 PM PST (August 9) and 1:00 AM PST (August 10) arriving in Fresno at 1:00 PM PST, August 10, 2012.



Twelve hours earlier, Figure 15 shows the location of the air mass between 1:00 PM PST on August 9 and 1:00 AM PST on August 10 in the Bay Area, southern Sacramento Valley, and central and northern San Joaquin Valley. This air mass would later arrive at Fresno during the exceedance hour.

Figure 16: Location of air mass between 1:00 AM PST (August 9) and 1:00 PM PST (August 9) arriving in Fresno at 1:00 PM PST, August 10, 2012.

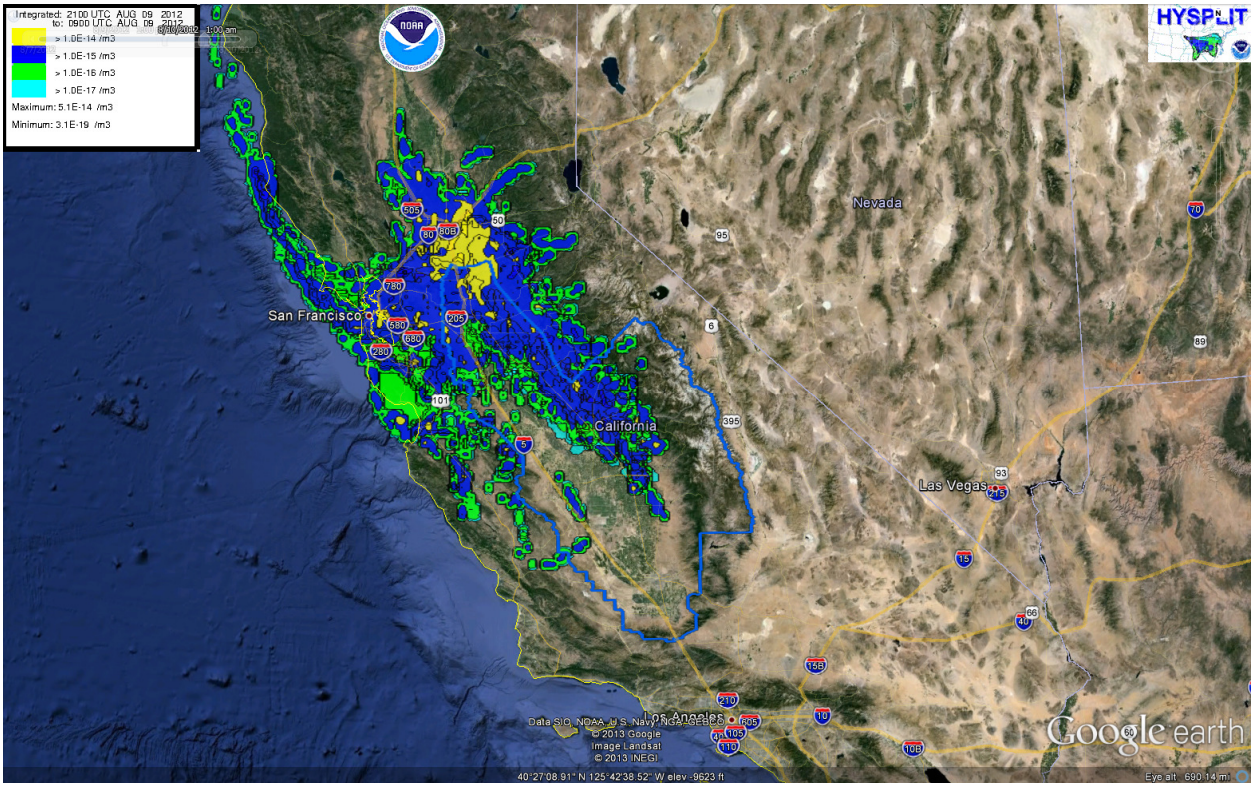
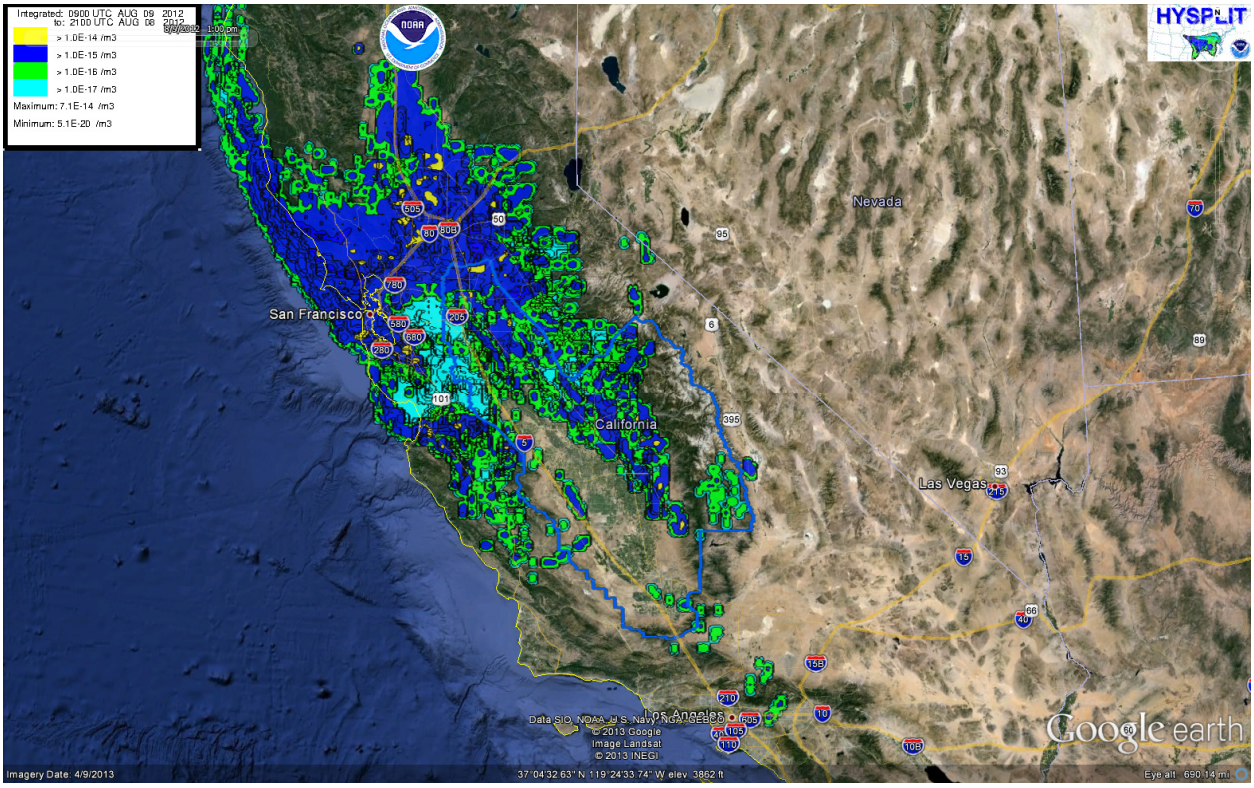


Figure 16 shows the location of the air mass twelve hours earlier between 1:00 AM PST and 1:00 PM PST on August 9 in the Bay Area, central and southern Sacramento Valley, and central and northern San Joaquin Valley. Wildfire smoke was observed in the northern San Joaquin Valley during this time period. The potential sources include smoke from the Chips and Bear wildfires. The air mass would later arrive at Fresno during the exceedance hour.

Figure 17: Location of air mass between 1:00 PM PST (August 8) and 1:00 AM PST (August 9) arriving in Fresno at 1:00 PM PST, August 10, 2012.



Twelve hours earlier, Figure 17 shows the location of the air mass between 1:00 PM PST on August 8 and 1:00 AM PST on August 9 throughout most of central California. This includes areas that were impacted by the Chips, Bear, and Piute Fires. This air mass would later arrive at Fresno during the exceedance hour.

As shown above in Figures 14-17, the main source of the air mass that arrived in Fresno during the 1-hour ozone exceedance recorded between 12:00 PM and 1:00 PM PST on August 10, 2012 came from locations where wildfire emissions were observed. Hence, the 1-hour ozone concentration of 127 ppb at Fresno-Drummond on August 10, 2012 was impacted by wildfire smoke.

3.4 August 10, 2012 Exceptional Event Media Coverage

The news articles, video footage, and photographs in Appendix E confirm and illustrate the Richmond Chevron oil refinery fire and wildfire emissions that were transported toward Fresno during the days prior to the 1-hour ozone exceedance at Fresno-Drummond on August 10, 2012.

Section 4: 1-Hour Ozone Concentration on August 10, 2012 was in Excess of Normal, Historical Fluctuations and the "But For" Test

This section satisfies the following federal requirements:

- Provide evidence that the event is associated with a measured concentration in excess of normal, historical fluctuations (*40 CFR 50.14(c)(3)(iv)(C)),*
- The exceedance would not have occurred but for the event (*40 CFR 50.14(c)(3)(iv)(D))*

Ozone concentrations on August 10, 2012 were exceptionally high at the Fresno-Drummond air monitoring site. This section will demonstrate that the exceedance would not have occurred but for the events previously described. In addition, the exceptionally high value measured is in excess of normal, historical fluctuations.

Data collected prior to January 1, 2013 was retrieved from EPA's Air Quality System database, which contains the official air quality data collected by EPA, states, local agencies, and others. Data collected in 2013, which is preliminary and currently under review, was collected by the District from the agencies that operate the monitors.

4.1 Historical Analysis

This Fresno-Drummond air monitoring site has been in operation since 1985 and provides a long continuous record of data for analysis. Since emissions levels have changed significantly since 1985, the analyses and tables below use data collected over the last 10 years (2004 through 2013) in order to keep the analyses based on a more level comparison.

4.1.1 Peak Values

Over the last 10 years the peak ozone measurement during the month of August at Fresno-Drummond was 127 ppb, which is due to the exceptional event occurring on August 10, 2012. The second highest peak from a year outside of 2012 was 123 ppb in 2008, which was also a high wildfire year with excess emissions in the San Joaquin Valley. Table 4-1 shows that over the last 10 years, only 2 maximum ozone values in August were measured in excess of 120 ppb, both of which occurred in years when the valley was directly impacted by fires. This demonstrates that Fresno-Drummond does not have peaks over 120 ppb during August without outside influences.

Table 4-1: Peak Ozone Measurements during August from 2004 through 2013.

Year	Maximum	Exceedances
2004	117	0
2005	105	0
2006	85	0
2007	85	0
2008	123	0
2009	115	0
2010	101	0
2011	105	0
2012	127	1
2013	104	0

Expanding the same analysis to the entire summer (May 1st to September 30th) shows the same pattern. Over the last 10 years, Fresno-Drummond has measured values over the federal 1-hour ozone standard late in the ozone season. Peak values over the entire summer are shown in Table 4-2. A 129 ppb measurement occurred twice in 2011, specifically September 22 and September 29. Similar to 2012, wildfires were impacting the District during this time period. All high values and exceedances of the federal 1-hour ozone standard recorded in 2011 and 2012 were during time periods when the District was being affected by fires. This further demonstrates that the historical record shows that Fresno-Drummond does not exceed the federal 1-hour ozone standard without contributions from outside sources.

Table 4-2: Peak Ozone Measurements from May 1st through September 30th for 2004 through 2013.

Year	Maximum	Exceedances
2004	122	0
2005	119	0
2006	121	0
2007	110	0
2008	124	0
2009	118	0
2010	108	0
2011	129	3
2012	127	1
2013	105	0

4.1.2 Infrequency of Exceedances

Closely examining the frequency of high values at Fresno-Drummond finds that for both the month of August and the entire summer, the 99th percentile value is 119 ppb. A common definition of an Exceptional Event is that the value should be greater than the 99th percentile of all measurements taken at the site.

The frequency distribution for both August and the entire summer for the 10 year period from 2004 to 2013 are shown in Figures 18 and 19. The 99th percentile is marked by the vertical line with exceedance days signified by the red bar to the right. August 10, 2012 was the only occurrence of an exceedance in August in the last 10 years. The exceedances identified in Figure 19 are comprised of August 10, 2012 and three days in late September 2011, all of which were affected by wildfires.

Figure 18: Fresno-Drummond Maximum 1-Hour Ozone Frequency Distribution (August only, 2004 through 2013).

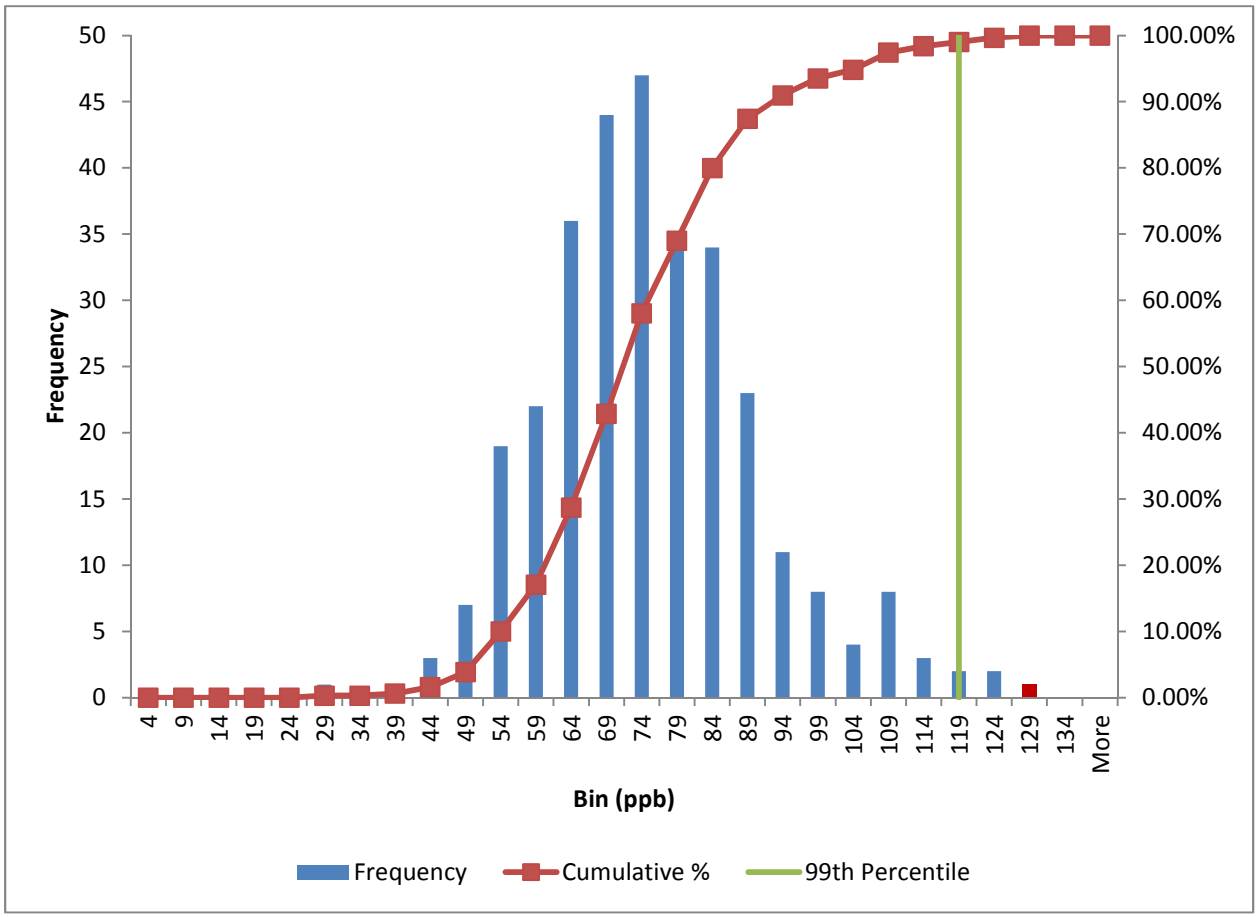
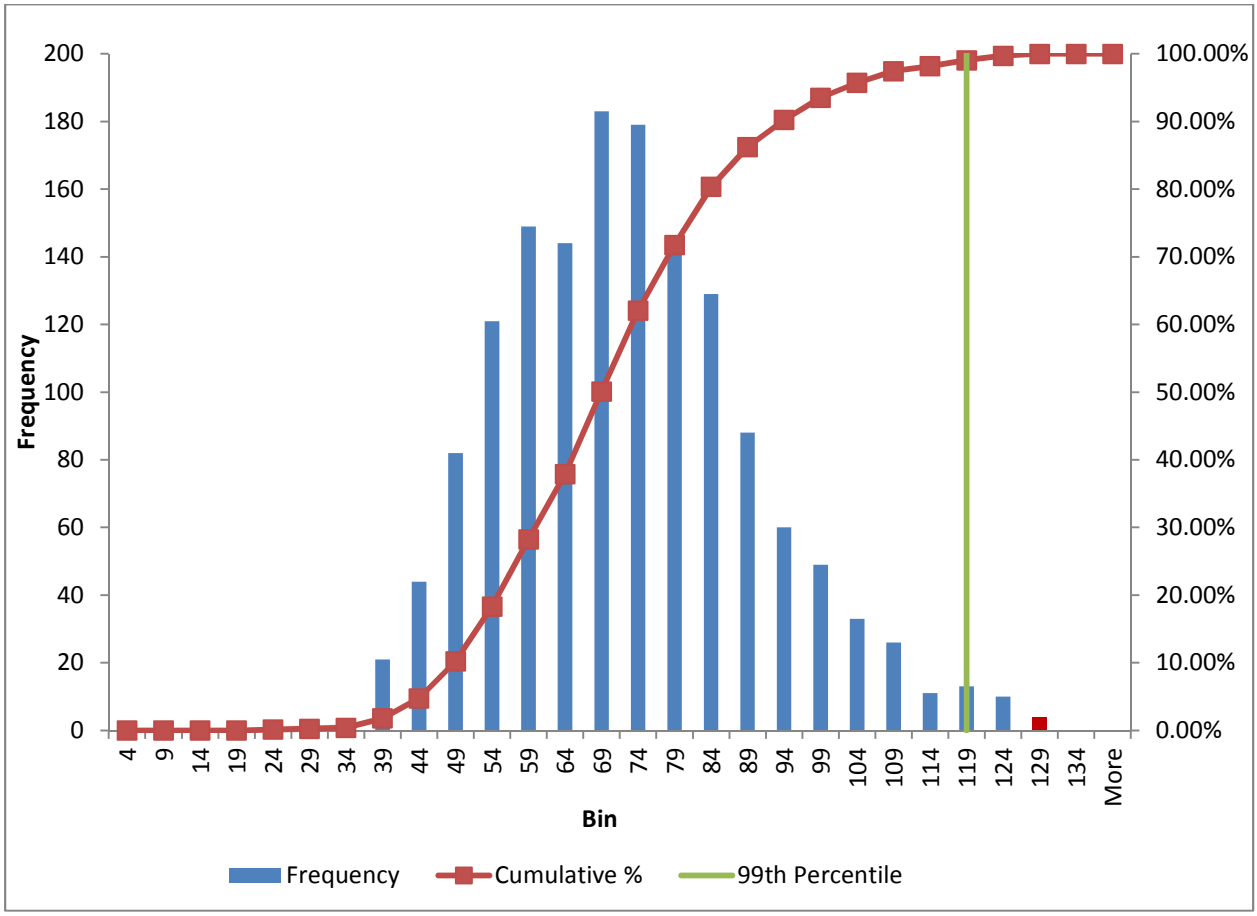


Figure 19: Fresno-Drummond Maximum 1-Hour Ozone Frequency Distribution (May 1st to September 30 only, 2004 through 2013).



Since the August 10, 2012 1-hour ozone exceedances at Fresno-Drummond exceeded the 99th percentile value, it can be concluded that this occurrence was rare and infrequent, thus supporting the case that this particular ozone value was exceptional.

At a site such as Fresno-Drummond that has been measuring zero exceedances for a number of years, an exceedance would be considered an outlier. A formal analysis was conducted to determine what measurements above a specific level should be considered outliers. One way to do this is to use box whisker plots to determine and display the outliers. Figure 20 is a box whisker plot displaying Fresno-Drummond ozone data for the last 10 years.

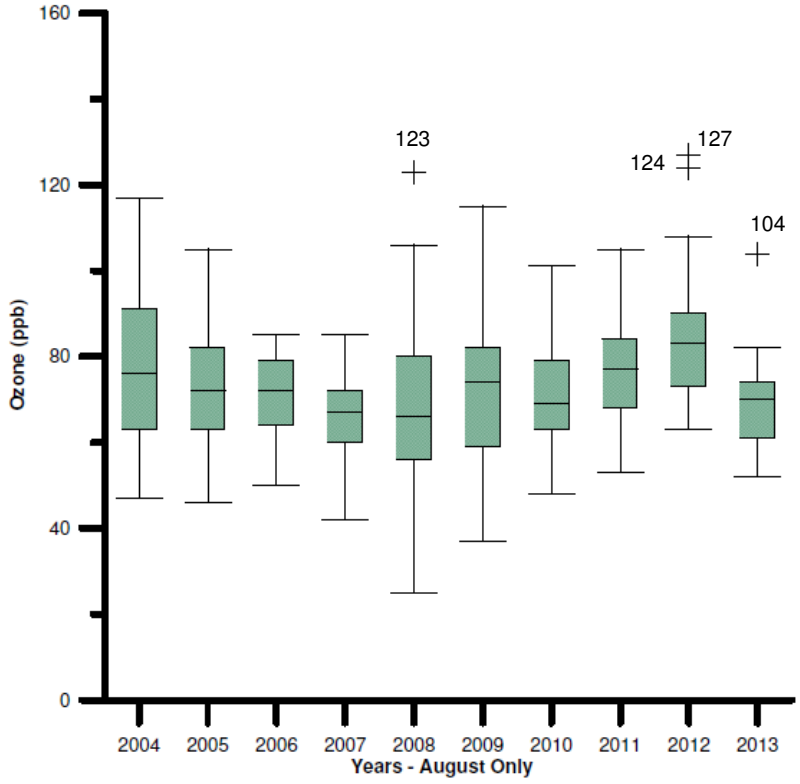
Using this method, an outlier is defined as a point that falls above the maximum value of the 1st quartile (above the top of the whisker). A quartile is one of the four divisions of observations which have been grouped into four equal-sized sets, based on their statistical rank. A statistical outlier is defined as

$$Outlier > QU + 1.5 * IQR$$

where, QU is the 75th percentile value, and IQR is the difference between the 75th and 25th percentile values.

The plot shows that for the month of August 2012, measurements equal to or greater than 109 ppb are considered outliers. Thus, the August 10, 2012 exceedance was clearly in excess of normal historical fluctuations.

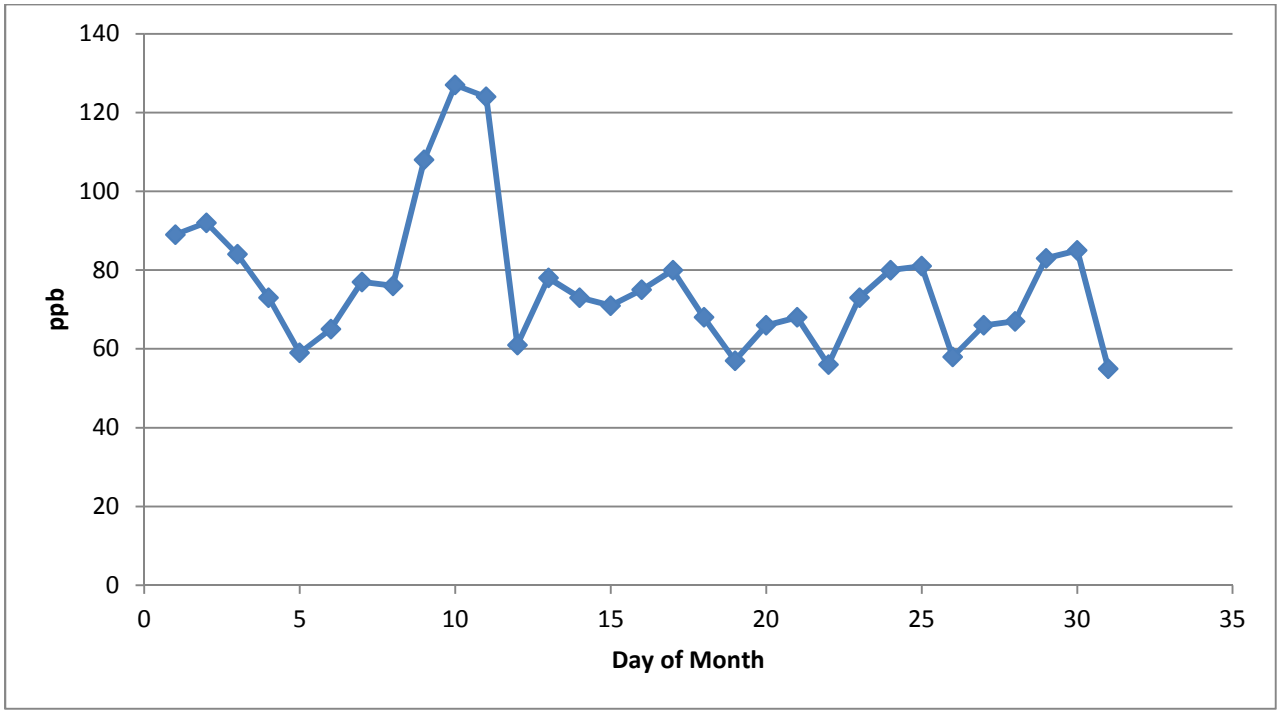
Figure 20: Fresno-Drummond August Maximum 1-Hour Ozone Box Whisker Plot Showing August 10, 2012 is in Excess of Historical Fluctuations and is an Outlier.



4.1.3 Examination of Ozone Levels, Temperature, and Solar Radiation

To further examine this event, the ozone data from Fresno-Drummond for all thirty-one days in August 2012 were plotted in Figure 21, which demonstrates that the days of August 9th, 10th, and 11th appear as unusually high ozone values for the entire month. This is even more striking when one considers that August 6 through August 14, 2012 were under the same weather pattern as previously described in Section 3.

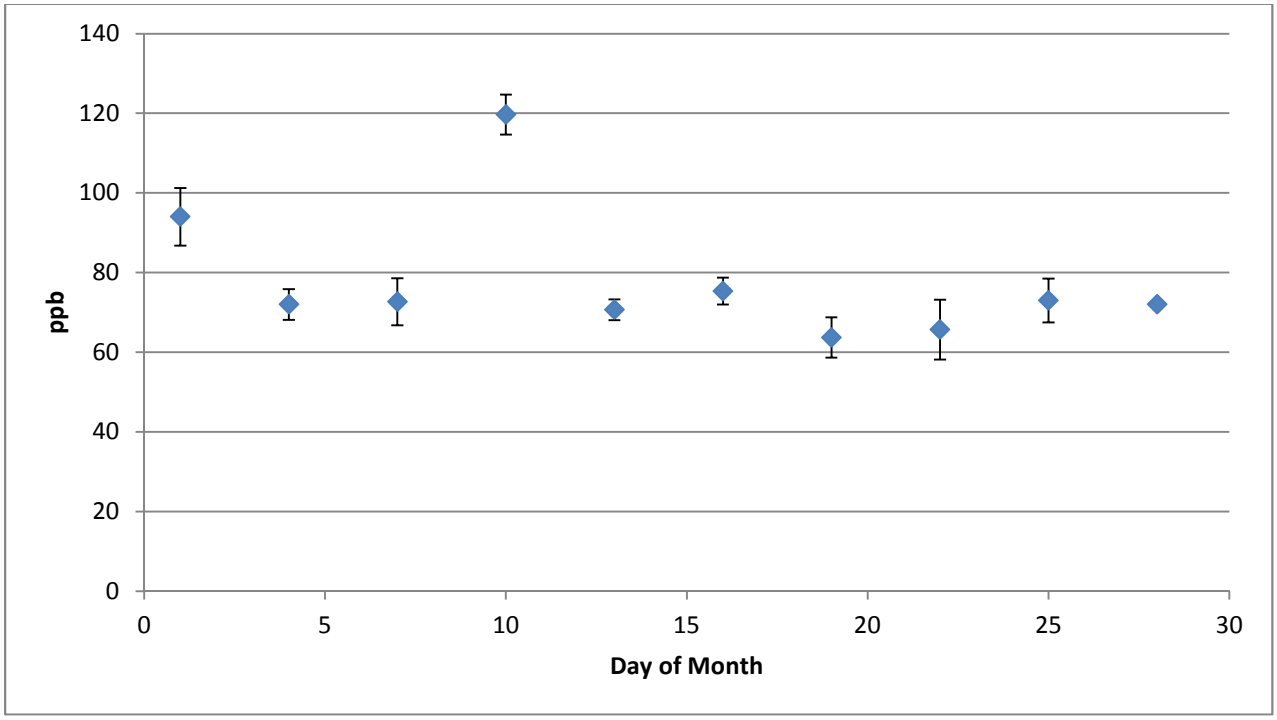
Figure 21: Fresno-Drummond August 1-hour ozone concentrations measured between 12:00 PM and 1:00 PM PST by day.



To examine the data yet more fully, the high values that peaked between 12:00 PM PST and 1:00 PM PST (noon) hour for each of the three days of were summed, averaged, and had standard error bars applied (a minimum of three data points are required for the standard error calculation). Averaging the August 9th, 10th, and 11th noon values into one number and using the mean date (August 10th) as a fulcrum, the preceding and following days were also averaged from groups of three days (noon hour values) throughout the month of August providing ten data point values for the month (the first data point includes the last day of July to maintain the three day grouping and calculate the standard error).

These ten averaged data points were then plotted and standard error bars applied (see Figure 22). This figure highlights the aberration of the ozone values measured on August 9th, 10th, and 11th as compared to the rest of the month. The averaged ozone measurement for the exceptional three days stands out at 120 ppb while the rest of the month (excluding the three days in question) had an average of 73 ppb. Eight of the nine data points reside between 60 and 80 ppb and is consistent with August's atmospheric stability as explained in Section 3 of this document. The exceptional three days measured an average of 47 ppb greater than the average for the entire month (excluding August 9th, 10th, and 11th).

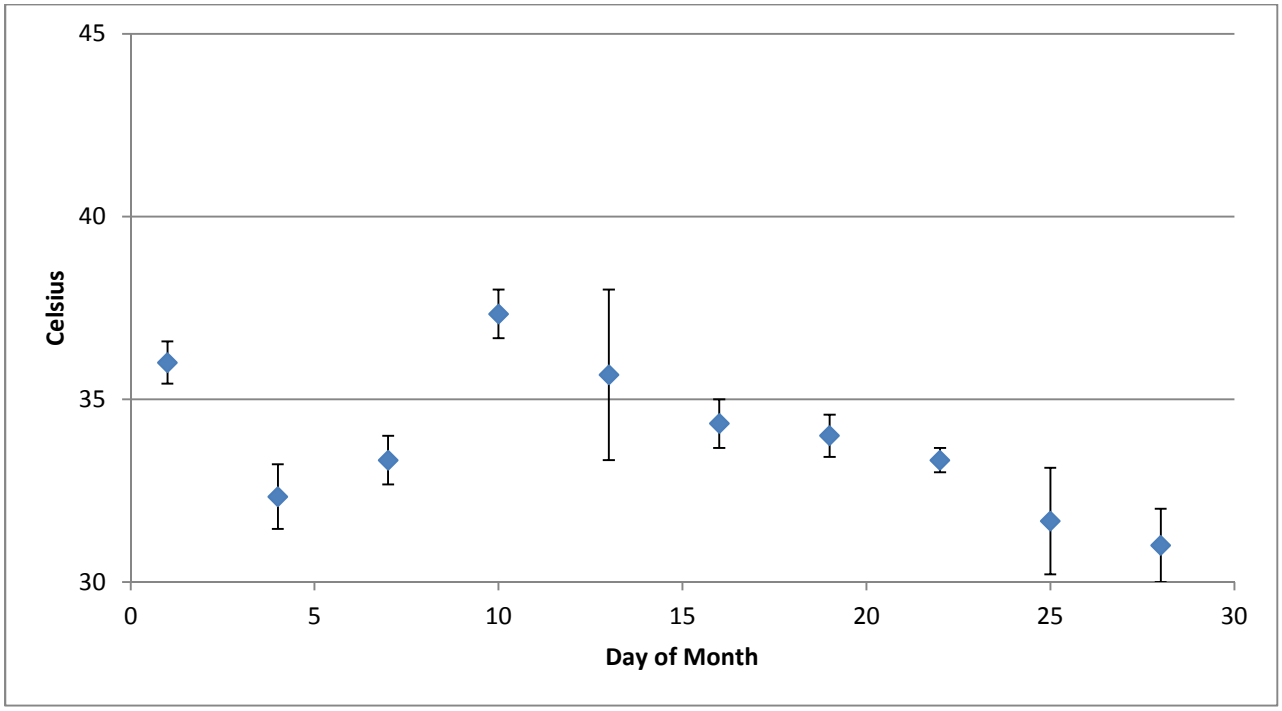
Figure 22: Fresno-Drummond, August 2012, 12:00 PM Measured Ozone Values, 3-Day Averages.



In Figure 22, the standard error bars for eight of the ten data points do not exhibit any statistical significant differences from one another, exhibiting ozone stability for nearly the entire month. The first data point of the month has a possibility of being statistically different from the rest, but only the August 10th data point shows a high probability of a statistical difference from all other data points, providing evidence of abnormal ozone levels during the August 10, 2012 event.

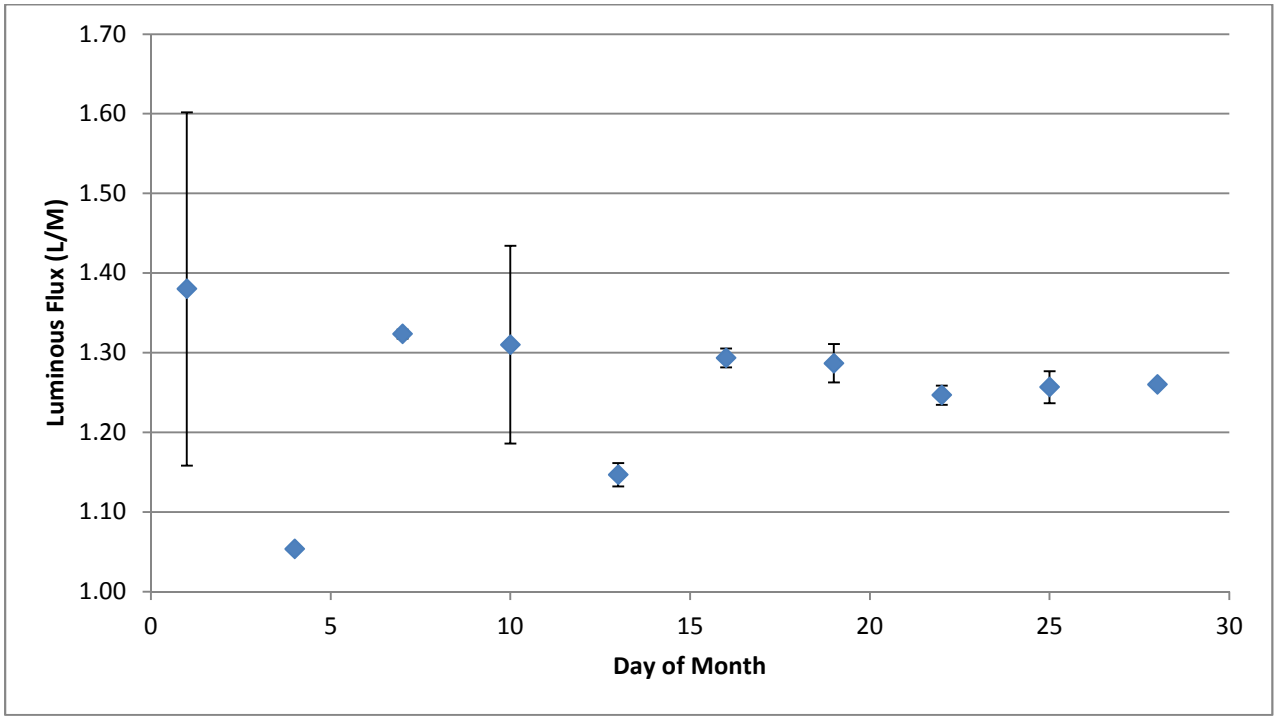
To discern if the high ozone readings for the three days were driven by temperature, the same methodology used in Figure 22 was applied to temperature and is presented in Figure 23. The noon hour three day grouping of average temperature data points for the month ranged from 31 to 37 degrees Celsius (88 to 99 degrees Fahrenheit). After examination of the standard error bars, Figure 23 displays that although August 10th was the hottest day of month, the August 10th point is not significantly hotter than the August 2nd or 13th data points. The August 10th data point was 37 degrees Celsius (99 degrees Fahrenheit) and is only one degree Celsius greater than the August 2nd and 13th data points which were each 36 degrees Celsius (97 Fahrenheit). This one degree Celsius greater in temperature cannot explain the greater than 40 ppb difference in measured ozone values between the 10th and the 2nd and the 13th leading to the conclusion that the maximum August 9th, 10th, and 11th ozone values were not primarily driven by temperature.

Figure 23: Fresno-Drummond, August 2012, 12:00 PM Measured Temperature Values, 3-Day Averages.



The above methodology was also applied to solar radiation, an important component to ozone formation. Because solar radiation data is not collected at the Fresno-Drummond site, data from the nearby site of Clovis was collected and analyzed (see Figure 24). The solar radiation for August 9th, 10th, and 11th registered as third highest of the month with wide standard error bars showing statistical differences from only two other data points for the entire month (August 4th and 13th), thus leading to the conclusion that the maximum August 9th, 10th, and 11th ozone values were not primarily driven by abnormal solar radiation.

Figure 24: Clovis, August 2012, 12:00 PM, Measured Solar Radiation, 3-Day Averages.



Because the maximum ozone readings appear to not be driven solely by local temperature and solar radiation, this suggests that the ozone was not completely formed by local precursor emission sources, but rather outside emission sources (refinery fire and wildfires) influenced the formation of the peak ozone on August 10, 2012.

4.2 Equivalent Days

In order to determine what the ozone values should have been on August 10, 2012 in the absence of the fires described previously, the District reviewed meteorological and ozone data for days that had equivalent meteorology. Since the exceptional event occurred on a Friday, the District also added "the day of the week" criteria to its search parameters.

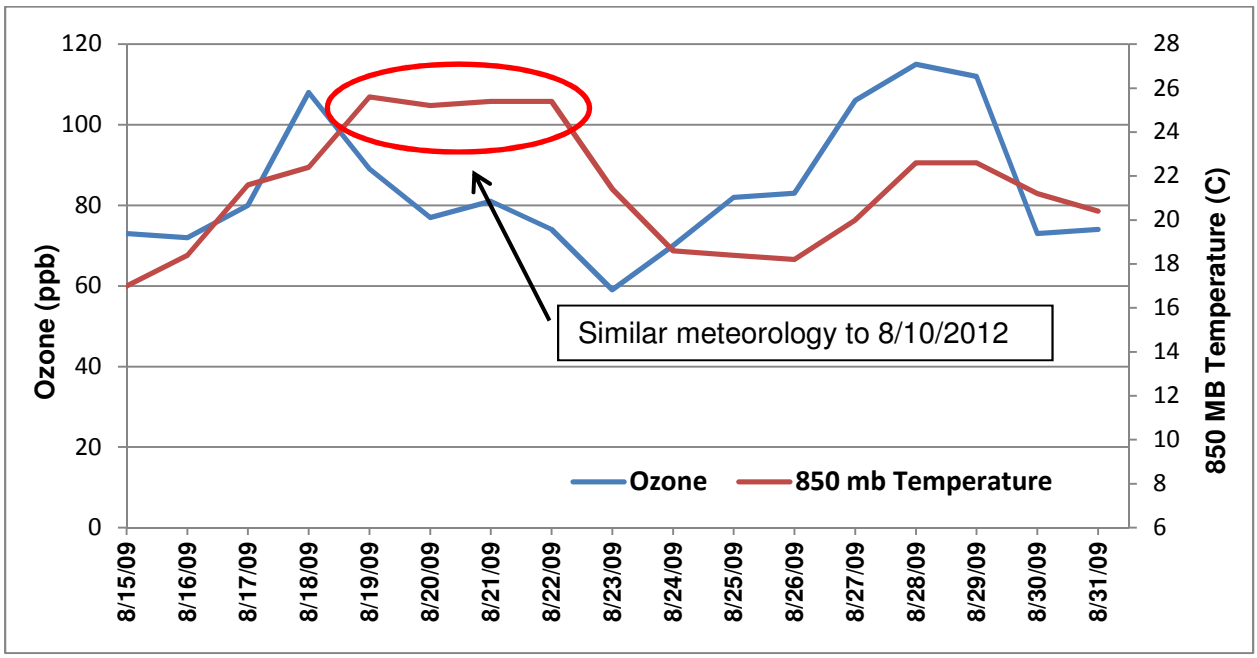
4.2.1 Selection of Equivalent Days

The District searched for equivalent days that were not impacted by fire related emissions over the past few years (2006-2012) by looking for Fridays that met a variety of meteorological conditions that were nearly the same as to what was measured on August 10, 2012. Through this process, meteorologically equivalent days were selected and analyzed to compare ozone levels on days not impacted by fire emissions to the August 10, 2012 event, which was influenced by fire emissions. Since the meteorology was similar among the days compared, the difference in ozone measurements could then be explained by varying emissions levels. In order to determine the equivalent days, the District used meteorological data at the surface and aloft to analyze the atmospheric conditions.

The analysis included reviewing 850 millibar (mb) temperatures from the Oakland sounding and investigating the associated weather patterns to ascertain and determine equivalent meteorological conditions from past events. The 850 mb level is approximately 5,000 feet in

height in the atmosphere. This parameter was utilized due to its strong correlation with 1-hour ozone pollution concentrations. As an example of the analysis conducted to select equivalent days, Figure 25 below shows that August 21, 2009 was selected due to the similarity between the 850 mb temperature pattern surrounding this day compared to what occurred around the August 10, 2012 event.

Figure 25: Maximum 1-hour ozone concentration (blue line) from August 15 to August 31, 2009 at Fresno-Drummond plotted with 850 mb temperature from Oakland (red line)



4.2.2 Analysis of Equivalent Days

Through the equivalent day comparison analysis, it was determined that three days had similar meteorology to that of August 10, 2012. The search of equivalent days focused only on recent years in order to ensure that emissions levels were relatively comparable. Including an equivalent day too far in the past may have skewed the analysis due to higher emissions forming higher ozone levels at the time. The three selected equivalent days with the corresponding meteorology are shown in Table 4-3.

Table 4-3: Comparison of Equivalent Ozone Days and Meteorological Measurements with the August 10, 2012 Measurements

Date	Fresno-Drummond	Oakland		Fresno Yosemite International Airport
	Observed 1-hour Peak Ozone (ppb)	500 mb Height	850 mb Temp (ºC)	Max Temp (ºF)
8/21/2009	81	590	25.4	100
8/25/2010	93	593	27.2	110
7/29/2011	89	589	24.4	100
8/10/2012	127	591	26.8	109

Averaging the ozone values among the three selected equivalent days gives 88 ppb, which can be viewed as an expected ozone value under the given meteorological conditions. Since the equivalent days had meteorological conditions nearly identical to those experienced on August 10, 2012, the peak ozone reading on August 10, 2012 should have fallen somewhere in between 81 ppb and 93 ppb. However, since the peak ozone reading on August 10, 2012 at Fresno-Drummond was 127 ppb, this provides further evidence that influences beyond meteorology alone contributed to the exceedance on this day.

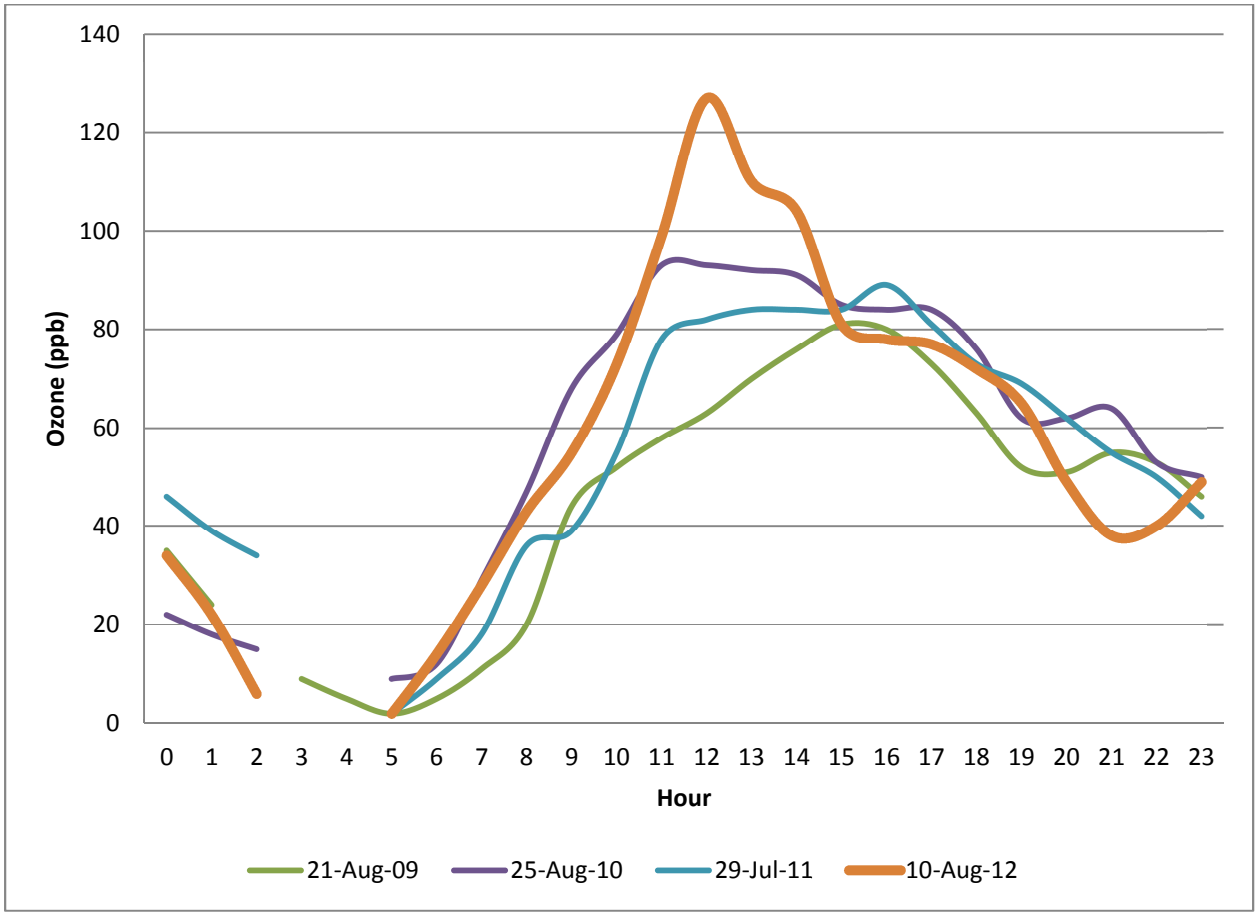
4.2.3 Diurnal Profiles of Equivalent Days

To provide further evidence of how ozone at Fresno-Drummond normally reacts under meteorological conditions similar to the equivalent days, which were also days without impact from fire emissions, ozone diurnal profiles were compared among the equivalent and exceptional event days to determine this difference. The results of this comparison are displayed in the following Figure 26.

As Figure 26 displays, the equivalent days had very similar profiles. Two of the three equivalent days had their peaks in the early afternoon, while the third day had its peak in the mid-afternoon. Two of the three equivalent days also plateaued during the afternoon, eventually decreasing into the evening. The third equivalent day rose gradually to its peak, timing it with the end of the plateau mentioned previously and decreased to evening levels in similar pattern as the other two equivalent days.

The profile for the August 10, 2012 event however is markedly different than those of the equivalent days. The ozone on the day of the exceptional event ramps up steeply, then peaks, and rapidly declines to normal levels before following the same decreasing pattern of the equivalent day profiles. This stark difference between the exceptional event and the equivalent day profiles provides evidence that emission levels on August 10, 2012 were anomalous when compared to the three other days of meteorological equivalence. This provides additional evidence that increased emissions from the refinery fire and wildfires were the cause of the abnormal diurnal profile and resulting peak value over the federal 1-hour ozone standard on August 10, 2012 at Fresno-Drummond.

Figure 26: Ozone Diurnal Profiles for August 10, 2012 and Equivalent Days



4.3 Regression Analysis

Multilinear Regression Analysis is a statistical technic for estimating relationships amongst variables. Typically regression analysis is used to determine the statistical relationship between a dependent variable to a set of independent variables. Once the relationship is known between the two sets of variables, one can determine the value of the dependent variable when independent variables change. In the case at hand, the District was able to use this analysis to determine what the ozone levels would have been at Fresno-Drummond on August 10, 2012 based on the observed meteorology and without the influence of added emissions from fires.

4.3.1 Method

Multilinear regression analysis is a statistical method that uses the least squares method to develop an equation that can predict a dependent variable from multiple independent variables. In this particular case, the District used meteorological variables to predict 1-hour ozone concentrations. This type of analysis produces the best results when the data set used to develop the predictive equation is under typical emission patterns. Since this analysis was conducted using meteorological data from the recent years of 2011, 2012, and 2013, the emissions levels were relatively stable through the period, and differences between the predicted and observed values can then be used to detect excess precursor emissions from unexpected sources. This analysis demonstrates that the Richmond refinery fire and several

wildfires provided the excess precursor emissions. In addition to the ozone formed in the area of the Fresno-Drummond air monitoring site, these excess precursors, combined with local emissions, formed ozone upwind of the monitor and may have arrived at the monitor already formed.

The predictive equation was developed by analyzing the most recent three years of available summertime meteorological data, and determined which three meteorological parameters most strongly correlated with the concurrently measured 1-hour ozone levels. The meteorological data was retrieved from the National Climatic Data Center and the ozone data was collected from the EPA's AQS database.

Based on this analysis, the three meteorological parameters that demonstrated the strongest correlation with 1-hour ozone at Fresno-Drummond were: yesterday's average wind speed at the Fresno-Yosemite International Airport, the 12Z 850 mb height from the Oakland sounding, and the 12Z 850 mb temperature from the Oakland sounding. The resulting predictive equation was

$$FDO3 = -3.21 * YFATWS + 1.08 * OAK850H + 1.35 * OAK850T - 100.75$$

where $FDO3$ is the predicted daily maximum 1-hour ozone value at Fresno-Drummond, $YFATWS$ is yesterday's average wind speed at Fresno-Yosemite International Airport, $OAK850H$ is the 12Z 850 mb height from the Oakland sounding, and $OAK850T$ is the 12Z 850 mb temperature from the Oakland sounding.

4.3.2 Estimated Uncertainty of Predictive Equation

As a part of the regression analysis, a 95 percent confidence interval was selected to measure uncertainty of the predictive equation. Through this selection, the standard error was also calculated to assess the uncertainty of the predicted 1-hour ozone values for the equivalent and exceptional event days. The resulting standard error in this analysis was 12 ppb, meaning that the uncertainty of each predicted value was anywhere from ±12 ppb of the predicted value. Applying this uncertainty to the predicted values provides a range of possible ozone concentrations that the observed meteorology on each day could have produced.

4.3.3 Predicted Values for Equivalent Days and Exceptional Event

Table 4-4 below shows both the observed and predicted ozone values based on the regression analysis and the predictive equation that was developed. As can be observed, the three equivalent days had predicted values within 4 ppb of the observed value. The results of this comparison show that the regression analysis is sound and is accurately portraying the ozone levels that would have been present without the influence of emissions from the fires discussed above.

Based on the accuracy of the predictive equation, the difference between the observed and predicted maximum 1-hour ozone concentrations on August 10, 2012 was 36 ppb. Since the equation was built on recent days without impacts from fire emissions, the predicted value of 91 ppb for August 10, 2012 is a sound estimate of what the observed concentration would have been but for the emissions impacts from the refinery fire and wildfires. Clearly this value is well below the federal 1-hour ozone standard of 124 ppb.

Table 4-4: Equivalent Days Ozone Measurements Compared to the Predicted Value from the Regression Analysis

Date	Observed 1-hour Ozone (ppb)	Predicted 1-Hour Ozone (ppb)
August 21, 2009	81	85
August 25, 2010	93	95
July 29, 2011	89	85
August 10, 2012	127	91

4.3.4 Analysis Results

Based on the analysis above, the District has shown that but for the cumulative impacts of the various fires related to the August 10, 2012 exceptional event, the exceedance of the federal 1-hour ozone standard would have not occurred. The cumulative impact of the fires was shown as 36 ppb of ozone. A more conservative approach is applying the standard error of ±12 ppb to the predicted value of 91 ppb to get a range of possible predicted ozone values for August 10, 2012.

Applying the standard error to the predicted 91 ppb value results in a range of 79 ppb to 103 ppb, with the most common predicted values near the center at 91 ppb and the least common predicted values at the extreme ends of the range. Therefore without the emissions from the refinery fire and wildfires, on August 10, 2012 Fresno-Drummond would have measured a maximum 1-hour ozone value anywhere from 79 ppb to 103 ppb, which is clearly well below the federal 1-hour ozone standard.

Section 5: Trans-boundary Ozone Effect on Valley Air Quality

Concurrent to this exceptional event document, the District is also developing additional evidence regarding the August 10, 2012 exceedance based on a weight of evidence case under §179B of the US Clean Air Act (CAA). Under the CAA air districts are only to be held responsible for addressing ozone and ozone precursors from North American anthropogenic sources via SIP-driven control measures. Redress for impacts from transported background are delineated in §179B of the CAA, i.e. districts are not accountable for contributions to ambient ozone concentrations that arise from background ozone or its precursors that are transported from beyond North American shores. Specifically, empirical evidence drawn from a number of supporting sources will be employed to demonstrate that transported background ozone from transpacific sources also contributed to the exceedance of the federal 1–hour ozone standard on August 10, 2012 at Fresno-Drummond. Evidence in support of this assertion will be based on the following analyses and related results:

1. A summary analysis of transported background ozone data in central California based on fixed site and aircraft monitoring in 2012 and 2013 conducted by UC Davis;
2. A regional characterization of geophysical conditions on and before August 10, 2012 based on observations of meteorological conditions, back trajectories from Fresno air masses in the boundary layer and lower troposphere, related satellite retrievals of regional NO2, CO and ozone, and aircraft soundings;

3. Drawing on the data elements cited above, an ozone budget analysis conducted by UC Davis will quantify the incremental contribution of transported background ozone to ground-level concentrations in Fresno on August 10, 2012.

This documentation will be forthcoming in a subsequent submittal to the EPA for consideration.

Section 6: Conclusion

District analysis shows that:

- NOx and VOC emissions are heavily controlled in the San Joaquin Valley and these controls have significantly decreased 1-hour ozone levels in the Valley over time (Section 2)
- Emissions from the industrial accident and wildfires caused the maximum 1-hour ozone concentration at Fresno-Drummond to exceed the NAAQS on August 10, 2012 (Section 3)
- The 1-hour ozone concentration on August 10, 2012 was the highest concentration ever recorded for the month of August at Fresno-Drummond since 2004 (Section 4)
- But for the industrial accident and wildfire emissions, which contributed 36 ppb of ozone to the concentration measured at the monitoring site, there would not have been an exceedance of the NAAQS (Section 4)

Since human activities that generated NOx and VOC emissions were approximately constant before, during and after the August 10, 2012 event in the valley, the District concludes that the exceedance would not have occurred “but for” the industrial accident and wildfires. The uncontrollable industrial accident and wildfires overwhelmed the RACT, BACT, and other District control measures for ozone that have been put in place in the Valley.

While the District established that 36 ppb of ozone was attributable to emissions from the refinery fire and wildfires, the exceedance on August 10, 2012 was only 3 ppb in excess of the federal standard. There is more than enough substantive evidence presented in this weight-of-evidence case to positively state that more than 3 ppb of ozone at Fresno-Drummond on the exceptional event day were attributable to the sources identified in this document.

In light of this conclusion, and with the demonstration (Section 1 and referenced sections) that the District has met all applicable requirements, the District requests EPA to concur that the August 10, 2012 Fresno-Drummond 1-hour ozone exceedance was caused by an exceptional event.

Section 7: References

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National Oceanic and Atmospheric Administration (NOAA): National Weather Service Storm Prediction Center's Surface and Upper Air Maps Map Archive http://www.hpc.ncep.noaa.gov/html/sfc_archive.shtml : Surface and upper level weather maps

National Oceanic and Atmospheric Administration (NOAA): National Weather Service Weather Prediction Center's Surface Analysis Archive http://www.hpc.ncep.noaa.gov/html/sfc_archive.shtml : Surface weather maps

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APPENDICES
&
SUPPORTING DOCUMENTS

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APPENDIX A: Notification to CARB in regards to 2012 Exceptional Event Days

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

May 21, 2013

Theresa Najita
Air Pollution Specialist
California Air Resources Board
1001 "I" Street
PO Box 2815
Sacramento, CA 95812

Dear Ms. Najita,

Please include the following day in the California Air Resources Board official letter to the US EPA on July 1st of a potential 2012 exceptional event that occurred in the San Joaquin Valley Air Basin.

Date	Parameter #	Site	AIRS #	Cause(Flag)
8/10/2012	44201 (Ozone)	Fresno-Drummond	06-019-0007	Other (RL)

If you have any questions about this request, please contact Stephen Shaw, Supervising Air Quality Specialist via phone at 559-230-5824 or via email at stephen.shaw@valleyair.org.

Thank you,

Samir Sheikh
Director of Strategies and Incentives

cc: Karen Magliano, Sylvia Vanderspek

Seyed Sadredin
Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
Tel: (559) 230-6000 FAX: (559) 230-6061

Southern Region
34946 Flyover Court
Bakersfield, CA 93308-9725
Tel: 661-392-5500 FAX: 661-392-5585

www.valleyair.org www.healthyairliving.com

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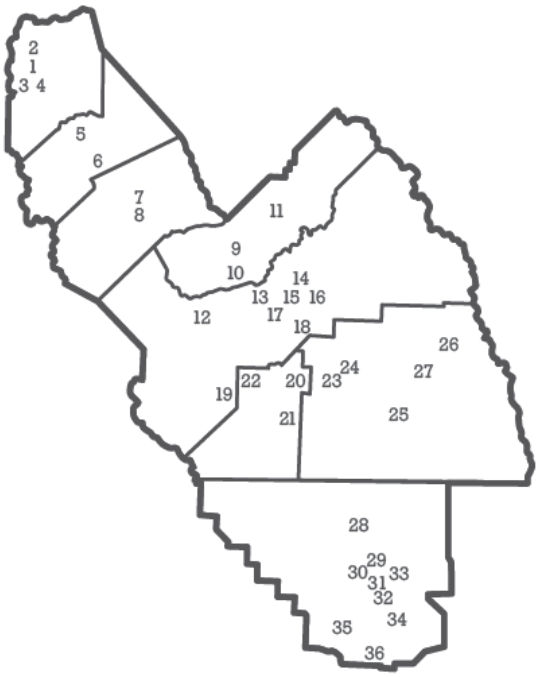
APPENDIX B: San Joaquin Valley Air Monitoring Network Map

Air Monitoring Sites in Operation



San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

SAN JOAQUIN COUNTY
- ■ 1 Hazelton: G, M, P, F, T
- ★ 2 Wagner/Holt: P
- ★ 3 Tracy: G, M, P, F
- ★ 4 Manteca: P, F, M

STANISLAUS COUNTY
- ■ 5 Modesto: G, M, P, F
- ★ 6 Turlock: G, M, P, F

MERCED COUNTY
- ★ 7 M Street: P, F
- ★ 8 Coffee St: G, F, M

MADERA COUNTY
- ★ 9 Madera City: G, P, F, M
- ★ 10 Madera-Pump Yard: G, M

Other[1]:
Chukchansi Indians
- ▲ 11 Picayune Rancheria: F

FRESNO COUNTY
- ★ 12 Tranquillity: G, F, M
- ★ 13 Sierra Sky Park: G, M
- ★ 14 Clovis: G, M, P, F
- ■ 15 Fresno-Garland: G,M, P, F, T, N
- ★ 16 Fresno-Pacific: F
- ★ 17 Drummond: G, P, M
- ★ 18 Parlier: G, M
- ★ 19 Huron: F, M

KINGS COUNTY
- ★ 20 Hanford: G, F, M, P
- ★ 21 Corcoran: G, F, M, P

Other[1]:
Tachi Yokut Tribe
- ▲ 22 Santa Rosa Rancheria: G, M, P

TULARE COUNTY
- ★ 23 Visalia Airport: M
- ■ 24 Church Street: G, F, M, P
- ★ 25 Porterville: G, F, M

Other[2]:
- ▲ 26 Lower Kaweah: A, G, M
- ▲ 27 Ash Mountain: A, G, M, F

KERN COUNTY
- ● 28 Shafter: G, M
- ■ 29 Oildale: G, M, P
- ■ 30 California Avenue: A, G, M, P, F, T
- ★ 31 Bakersfield-Muni: G, M
- ■ 32 Planz Road: F
- ■ 33 Edison: G, M
- ■ 34 Arvin-Di-Giorgio: G, M
- ★ 35 Maricopa: G,M
- ★ 36 Lebec: F, M

MONITORING DESIGNATIONS
- A Acid Deposition
- F Fine Particulate (PM2.5)
- G Gaseous
- M Meteorological
- P Particulate (PM10)
- N National Core
- T Toxins

MONITORING OPERATION
- ★ Sites operated by the District
- ● Sites operated by the District & CARB
- ■ Sites operated by CARB
- ▲ Sites operated by other agencies

Other[1] Tribal
Other[2] National Park Service

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APPENDIX C: Public Notification of the Exceptional Event

C.1 San Joaquin Valley Air Pollution Control District Press Release

News Release
For immediate release
8-9-12
Attn: Local news, health and weather sections

San Joaquin Valley AIR POLLUTION CONTROL DISTRICT
HEALTHY AIR LIVING

Northern Region Contact – Modesto
Anthony Presto (209) 557-6472
Central/Southern Region Contact – Fresno
Jaime Holt (559) 230-5850

Wildfire smoke impacts northern counties
Air officials warn of smoke emissions through weekend

Smoke from a wildfire near the northern boundaries of the San Joaquin Valley air basin is impacting San Joaquin County, with potential impacts in Stanislaus and Merced counties.

Air officials said the pattern may continue through the weekend, and encourage residents in these areas to monitor their local air quality and take appropriate precautions as needed.

"Our standard is, if you can smell smoke, you are being affected by it," said Jaime Holt, the District's chief communications officer.

Smoke produces large quantities of particulate matter, which can exacerbate or cause respiratory disease and lung damage.

The fire in Plumas County is producing smoke that is remaining in the air basin because of a stagnant high-pressure system.

Additionally, other fires around the air basin including the Sierra National Forest in Fresno County and Sequoia National Forest in Kern County may produce smoke impacts in the central and southern regions, officials said. The Air District's Real-Time Air Advisory Network (RAAN) is a tool residents can use to check their localized air-quality conditions (http://www.valleyair.org/Programs/RAAN/raan_landing.htm). Subscription to this automated data-delivery service is free. Through RAAN, subscribers can link their computers to the monitoring station of their choice, which automatically delivers hourly data as conditions change.

Officials said smoke in the air basin may remain as long as the fires continue.

"The best protection is information, and folks can obtain that through RAAN," Holt said.

For more information about the Valley Air District, call a regional office: in Fresno, 559-230-6000; in Bakersfield, 661-392-5500; and in Modesto, 209-557-6400.

The Valley Air District covers eight counties including San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare and the Valley air basin portion of Kern. Visit www.valleyair.org to learn more.

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APPENDIX D: Media Coverage

D1. Bay Area Air Quality Management District Press Releases on the Richmond Chevron oil refinery fire:

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

NEWS

FOR IMMEDIATE RELEASE
August 7, 2012

CONTACT: Kristine Roselius,
415.749.4900

Air District statement on Chevron fire

SAN FRANCISCO – At 6:15 p.m. yesterday, August 6, a fire began at a crude unit of the Chevron Refinery in Richmond. A shelter in place was issued by the Contra Costa County Health Department to protect area residents. It ended at 11:31 p.m. yesterday.

The fire was contained last night. Safety officials are allowing a small controlled burn as a safety measure to reduce pressure.

The Bay Area Air District had inspectors on the scene last night assisting first responders and collecting air quality samples from the surrounding area. These were sent to the Air District's lab at 6 a.m. this morning, with results expected late today.

Local air quality monitors show minimal impacts from the fire, with pollution levels well below the federal health standards. Weather conditions were favorable at the time of the incident – surface winds were light and heat pushed the smoke upwards where stronger winds aloft helped to disperse it.

As part of the investigation, the Air District will review air quality monitoring data from monitors at the Chevron facility.

The Bay Area Air Quality Management District (www.baaqmd.gov) is the regional agency responsible for protecting air quality in the nine-county Bay Area.

# # #

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

NEWS

FOR IMMEDIATE RELEASE
August 7, 2012

CONTACT: Kristine Roselius,
415.519.5419

Air District statement on Chevron fire air quality samples

SAN FRANCISCO – The Air District had inspectors at the scene of the August 6 Chevron fire, collecting air quality samples from the surrounding area. These were sent to the Air District's lab at 6 a.m. this morning, and the results came in this afternoon.

The results of our lab analysis of air samples from the Chevron fire show levels of these potentially toxic pollutants to be well under their reference exposure levels or RELs, and not a significant health concern. These concentrations were similar to the "background" levels measured throughout the Bay Area by our monitoring network.

The Air District lab tested these air quality samples for a group of 23 compounds, most of which have been identified by the state of California as Toxic Air Contaminants. The Air District regularly tests and measures amounts of these compounds through its air monitoring network. These pollutants are organic compounds typically found in petroleum products.

The Air District also performed an additional analysis to identify and estimate concentrations of any other pollutants that might show up in significant amounts.

Reference Exposure Levels, or RELS, were developed by the Office of Environmental Health Hazard Assessment as public health measurements based on epidemiological evidence and sensitive populations. RELS are set at levels that could impact sensitive populations - children, the elderly, or those with pre-existing health issues or respiratory conditions.

Local air quality monitors also showed near normal concentrations of air pollution from the fire, with pollution levels significantly below federal health standards. Weather conditions were favorable at the time of the incident – surface winds were light and heat pushed the smoke upwards where stronger winds aloft helped to disperse it.

As part of the investigation, the Air District has reviewed air quality monitoring data from monitors at the Chevron facility. Chevron's findings were consistent with the Air District's.

The Bay Area Air Quality Management District (www.baaqmd.gov) is the regional agency responsible for protecting air quality in the nine-county Bay Area.

# # #

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

NEWS

FOR IMMEDIATE RELEASE
August 9, 2012

CONTACT: Lisa Fasano,
415.710.3505

Air District statement on continued Chevron investigation

SAN FRANCISCO – The Air District is continuing its investigation and analysis of air monitoring data from the Chevron fire on August 6.

The Air District recently released the results of eight air samples taken during the Chevron fire. In all but one sample the District measured 23 compounds. One sample contained trace amounts of four aldehyde compounds in addition to the 23 compounds identified in the other samples.

In a previous statement, it was reported that Air District and Contra Costa County air sample results showed all toxic air contaminants were below Office of Environmental Health Hazard Assessment Reference Exposure Levels, or RELS. That initial statement was incorrect. Although all sample results were within the background levels of compounds found in Bay Area air, acrolein was above OEHHA's Reference Exposure Level.

Levels of acrolein throughout the Bay Area are commonly above the Reference Exposure Level. Levels routinely range between 1 and 4.5 parts per billion. The level of acrolein in one of eight samples was 3.2 parts-per-billion. Levels of acrolein in the other seven samples taken throughout Richmond and nearby locations were below the Reference Exposure Level. Acrolein is an oxygenated hydrocarbon similar to ethanol.

While air samples taken near the facility detected normal background levels of toxic air contaminants, there was the potential for significant smoke in the area that impacted residents in the downwind neighborhoods. The likely source of health impacts from the fire is particulate matter from smoke.

Stationary real-time particulate matter monitors in upwind areas did not pick up elevated levels of the particulate matter during the fire. Filter-based data from an air quality monitoring station in San Pablo, two miles from the Chevron facility, was collected following the fire and is being analyzed for particulate matter levels. Results are expected in the next two weeks.

Particulate matter has immediate health impacts – itchy, watery eyes, increased respiratory symptoms such as irritation of the airways, coughing or difficulty breathing and aggravated asthma.

The Bay Area Air Quality Management District (www.baaqmd.gov) is the regional agency responsible for protecting air quality in the nine-county Bay Area.

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2012-029

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

NEWS

FOR IMMEDIATE RELEASE
August 23, 2012

CONTACT: Lisa Fasano, Air District
415.749.4900

Victoria Balladares, CCHS
925.383.9367

Air District lab completes PM sample analysis from Chevron fire

SAN FRANCISCO – The Bay Area Air District today released results of particulate matter sampling from the San Pablo air monitoring site. This was the closest particulate sampling location to the refinery fire and is located approximately two miles from the Chevron facility.

The data from the filter sample collected beginning at midnight August 7 through midnight August 8 was analyzed for elemental carbon, organic carbon, weight and other chemical components of particulate matter.

Results from the extensive two week laboratory analysis show slightly elevated levels of elemental carbon, a marker for combustion. Results show some evidence of potential smoke particles lingering in the air after the fire was extinguished.

"The particulate results are what we expected to see given that the monitoring began at midnight after the fire was out," said Dr. Wendel Brunner, director of public health for Contra Costa Health Services. "These results, however, do not suggest there were not health impacts experienced by residents in the immediate area."

The result shows concentrations below state and federal air quality standards, but do show marginally higher levels of fire related particulate for this time of year. The Bay Area generally experiences elevated particulate matter pollution in the winter months when weather conditions trap PM near ground level.

"Weather conditions the night of the fire helped push much of the particulate pollution from the fire high into the atmosphere," said Eric Stevenson, director of air sciences for the Bay Area Air District. "And the public responded appropriately by sheltering in place and seeking medical attention if they experienced breathing difficulty or concerns about their health."

Contra Costa Health Services issued a shelter-in-place during the refinery fire and recommended people experiencing trouble breathing seek medical attention.

The Bay Area has one of the densest air monitoring networks in the country designed to measure daily air quality readings in the nine-county region. The network often does not capture localized impacts from a short duration incident like the Chevron fire. In a large industrial fire like the one at the refinery, smoke may impact residents in downwind neighborhoods where air monitoring stations are not located.

-MORE-

2012-033

Continued…Air District lab completes PM sample analysis…

The result from the San Pablo filter sample was consistent with measurements taken from the nearest continuous real-time ambient air monitors stationed in Vallejo, Oakland and San Rafael, which did not show high levels of fine particulates on the night of the fire.

In contrast to the continuous monitors, the filter sampler at San Pablo operates every six days on an EPA mandated schedule, and must be analyzed in the laboratory to determine concentrations.

The Air District and Contra Costa Health Services are investigating new monitoring technologies to better capture the full air quality impacts from localized incidents like the Chevron fire. The Air District and the County hope to improve monitoring capabilities in a cost-efficient way, possibly adding mobile monitoring capabilities to better assess incidents in the future.

Additional information can be found at http://www.baaqmd.gov/Divisions/Communications-and-Outreach/Air-Quality-in-the-Bay-Area/Incident.aspx.

The Bay Area Air Quality Management District (www.baaqmd.gov) is the regional agency responsible for protecting air quality in the nine-county Bay Area.

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D2. New Articles on the Richmond Chevron oil refinery fire

Fire at Chevron refinery in Richmond

East Bay residents told to stay inside as thick smoke spews into sky from Chevron plant

Justin Berton, Kevin Fagan and Vivian Ho
Updated 4:44 pm, Thursday, July 11, 2013

Smoke from the Chevron refinery fills the sky above Richmond after a series of explosions beginning around 6:15 p.m. No one was killed, Chevron said. Photo: Lance Iversen, The Chronicle

Thousands of East Bay residents were ordered to stay in their homes with the windows and doors closed Monday night after a series of explosions and fires tore through Chevron's Richmond refinery.

The explosions started about 6:15 p.m., and at least two large fires spewed thick, black smoke into the darkening sky.

The fire started at the refinery's No. 4 Crude Unit, Chevron officials said. Just before 6:30 p.m., an inspection crew discovered that there was a diesel leak in a line in the unit - and that the leak was growing.

Shortly after the crew evacuated the area, the diesel ignited, said Nigel Hearne, manager of the refinery.

All employees had been accounted for and there were no fatalities, but one refinery worker suffered burns to his wrist and was treated at the on-site clinic.

About five minutes after the explosions, sirens tore through the air, alerting residents to stay indoors to prevent breathing tainted air. Some people got in their cars and drove away from the smoke that spread throughout the neighborhoods east of the refinery.

"Everybody evacuated so fast people's car alarms were going off," said Sara Monares, 55, who lives a short distance from the refinery.

Health officials' main concern was fumes from crude oil and diesel fuel, but winds were carrying the smoke and pollutants skyward, said Maria Duazo, a hazardous materials specialist with the Contra Costa County Health Services Department.

A shelter-in-place warning was issued for Richmond, North Richmond and San Pablo and remained in effect late Monday. An advisory for those with lung conditions or a sensitivity to smoke to stay indoors was expanded to all of Contra Costa County. Residents as far away as the Oakland hills were being warned by police about smoke heading that way.

Air samples taken

As the smoke stretched out over the El Cerrito hills, Contra Costa County hazardous materials units rolled through the neighborhoods, taking air samples.

Trisha Asuncion, hazardous materials specialist with Contra Costa County, said that no hazardous compounds had been detected in the air, but that monitoring would continue.

Kaiser's Richmond Medical Center said several dozen people came to the emergency room Monday night complaining of shortness of breath, but none was seriously ill.

Julius Bailey, 21, who lives on Barrett Avenue in Richmond, blocks away from the refinery, was at the hospital wearing a face mask. He said his throat had started burning and his eyes itching. After seeing a doctor, he said, "They told me I'm not going to die, but it sure feels pretty serious."

BART closed the Richmond, El Cerrito del Norte and El Cerrito Plaza stations at about 7 p.m., and shut down service between Richmond and El Cerrito and Richmond and North Berkeley about 30 minutes later. Only the Richmond Station remained closed late Monday.

Toll takers on the westbound Richmond-San Rafael Bridge were told to take shelter because of the fire, said Officer Ralph Caggiano, a California Highway Patrol spokesman. He said he wasn't sure whether cash-paying drivers would get a free trip, but drivers with FasTrak were still being charged tolls.

Previous fires

The Chevron Richmond refinery was founded more than a century ago and is Northern California's largest, capable of processing more than 242,000 barrels of oil each day. It is the third-largest refinery in the state. A prolonged closure could push up gasoline prices, which are already rising nationwide because of a rally in the market for crude oil.

The refinery has suffered fires before. In January of 2007, the seal on a pump in a crude unit failed, triggering a fire that lasted almost 10 hours.

David Rorai, 60, was working as a welder for Chevron about a decade ago when another explosion injured several workers.

"On that last one, we ran like hell," he said, as he stood watching the smoke from Monday night's fires. "We got in our cars and left. I feel for those guys in there right now." Rorai said danger is just a fact of the job when you work around explosive gases.

"You got to figure if the guy next to you didn't clear his line right or wasn't being careful, that's it for you," he said. "Comes with the job."

Chevron has for years wanted to overhaul and upgrade the facility. But many Richmond residents and environmentalists have objected, saying the project would create more air pollution in a community that already has too much. Although Richmond's City Council approved the renovation project in 2008, a judge halted construction work the next year, ruling that Chevron had not answered key questions in the project's environmental impact report.

Monday night, along a fence line on Barrett Avenue in Richmond, a dozen children and teenagers stood fixated, covering their mouths with their shirts as they watched the smoke pour into the sky. They said they had never seen anything like this in their lives.

"When I heard the booms, I was scared and hid because I thought it was grenades," said Dai'lonie Fuller, 12. "I'm just here to get a look, and then I'm staying inside."

Under the spreading plume of smoke sat the Christian Home Missionary Church, about a block from the fence. While one singer coughed, the dozen-woman choir sang, despite evacuation orders, their urgent gospel music filling the empty street outside.

"We've got a funeral to sing at tomorrow, and that doesn't wait," said Laura Young, 65. "We're trying to do what we've got to do."

The song they were singing was "God Will Take Care of You."

The fire dwindled down to a few thin twists of smoke by about 8:30 p.m., but flames still flickered beyond what observers could see from the perimeter. Chevron officials said crews were fighting the blaze with nitrogen and steam to keep it cool, but had no estimate as to when it would be extinguished.

By 8:45 p.m., the winds shifted to the west, blowing the smoke away from the city and into the bay, said Greg Lawler, a health services hazardous materials specialist for Contra Costa County.

Ken Workman, 47, stood on Macdonald Avenue, peeking through the fence at the fire and shaking his head. He has lived a couple of blocks away since 1987 and said he thinks the refinery doesn't do enough to protect local residents.

"The wind never blows that smoke to Marin County, now does it?" he said. "They made sure of that. I think it's intentional that they don't protect us."

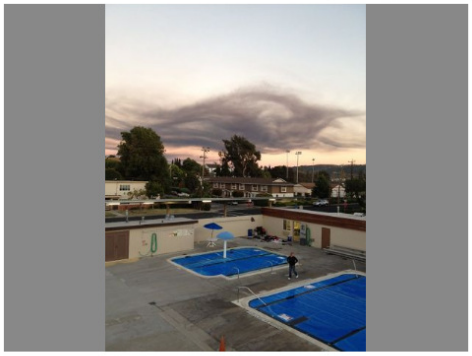
Justin Berton, Kevin Fagan and Vivian Ho are San Francisco Chronicle staff writers. E-mail: kfagan@sfchronicle.com, jberton@sfchronicle.com, vho@sfchronicle.com Twitter: @KevinChron, @justinberton, @VivianHo San Francisco Chronicle staff writers Bob Egelko and David Baker contributed to this story.

Additional photos from above article:

Chevron oil refinery, Richmond

Fire at the Chevron Refinery in Richmond as seen from the Berkeley Marina on Monday August 6th, 2012. Photo: Will Kane, San Francisco Chronicle

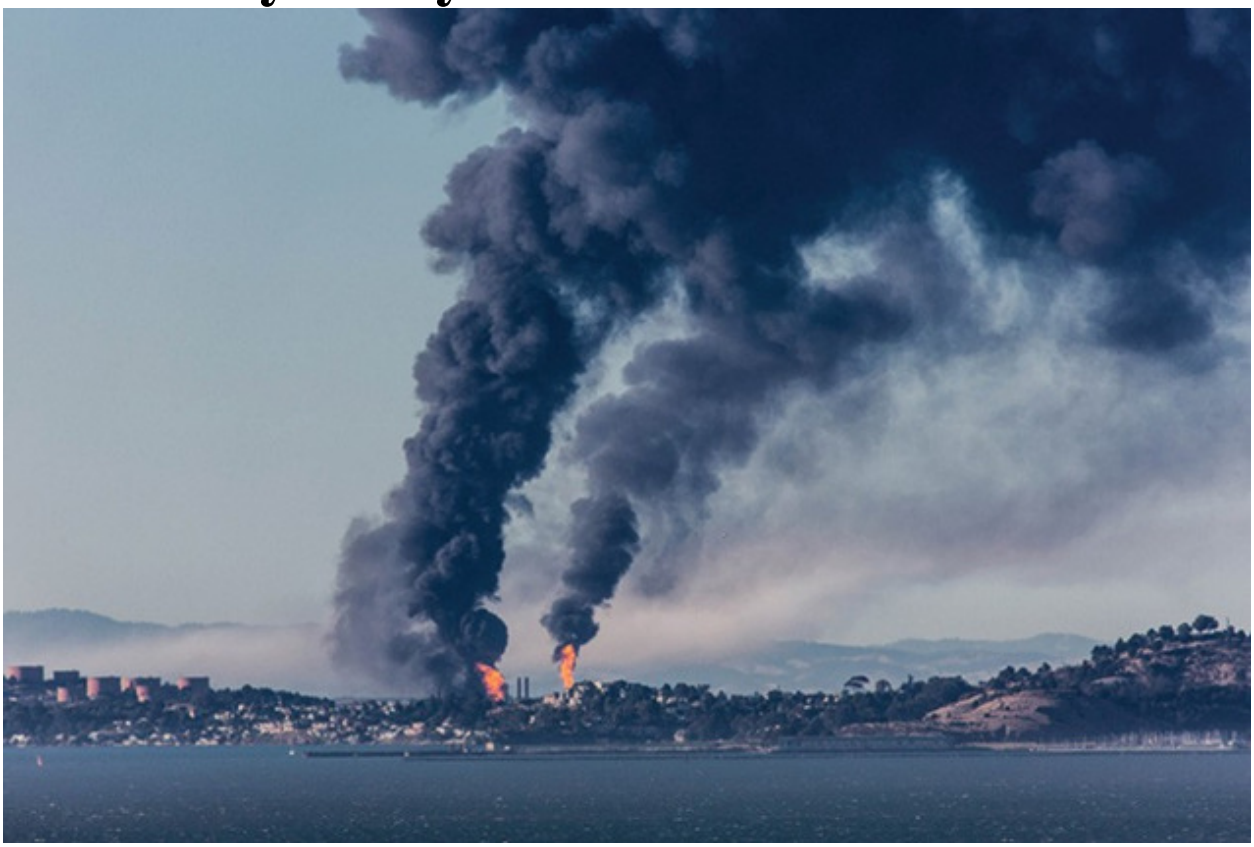
Fire at the Chevron Refinery in Richmond as seen from Tiburon, Calif. on Monday August 6th, 2012. Photo: John Storey, Special To The Chronicle



Smoke from the fire at the Chevron refinery in Richmond is seen from Benicia, Calif., on August 6, 2012. Photo: Courtesy Nate Kane

High Country News
For people who care about the West

The Bay Area Chevron explosion shows gaps in refinery safety



Flames and plumes of smoke rise from the Chevron refinery in Richmond, California, after an explosion last month. Nearby residents were warned to stay inside, but more than 14,000 were eventually treated at nearby hospitals.
By Phil McGrew

News - From the September 03, 2012 issue by Jeremy Miller

When a crude-processing unit at Chevron's Richmond, Calif., refinery burst into flame in early August, sirens wailed through local neighborhoods as pillars of smoke blackened the sky over the city and surrounding hillsides.

The plant's emergency management system issued 18,000 calls to nearby residents, urging them to "shelter in place" -- closing windows, sealing cracks under doors with wet towels, turning off air conditioners -- until further notice. But hundreds of people, many from poor, predominantly

black and Hispanic neighborhoods near the plant, said they received no calls. Jim McKay, a representative of the Bay Area Air Quality Management District, told a town hall meeting the next day that there had been no adverse impacts to air quality. But in the days following the fire, more than 14,000 people poured into local hospitals complaining of respiratory problems.

Chevron's 100-year-old plant has long been a source of contention in this industrial East Bay city -- and for good reason. It supports hundreds of local businesses and injects millions into the local economy, but it's also racked up dozens of air-quality violations in the last year alone, not to mention three serious fires in the last 12 years. The Richmond refinery is the state's leading source of greenhouse gas emissions and a routine violator of the Clean Air and Clean Water acts.

But the facility is hardly an anomaly. With far less publicity, two smaller Wyoming refineries went up in flames within days of the Richmond blaze. The week before, a crude unit exploded at Cheyenne's Frontier refinery. Nearby residents described feeling the heat radiating from the burning plant as they scrambled to escape the jet-black plume. No alarms sounded; no emergency phone calls were made. A few days later (just a day before the Richmond accident) a refinery operated by Sinclair, near Rawlins, burst into flame, injuring a worker. This was merely the latest of six fires at that refinery in the past three years, three of them in the last three months. There have been numerous other incidents, including the illegal discharge of oil wastes that killed more than 100 birds. (In late August, the EPA announced $3.8 million in fines against Sinclair for repeated air pollution violations at its Wyoming refineries.)

Dig into the records of any of the country's refineries and you will find a similar litany of explosions, toxic releases, violations, worker injuries -- and deaths. A recent United Steelworkers report estimated that a fire breaks out, on average, every week at a U.S. refinery. Between 2000 and 2010, at least 117 workers were killed in the nation's oil refineries and coal-processing plants, according to Bureau of Labor statistics.

Of the 45 oil refineries scattered across eight Western states, 14 are considered "large," producing more than 75,000 barrels per day. All of these large refineries are located in or near major population centers -- and many smaller facilities are smack in the middle of towns and cities. The West's most serious recent refinery disaster happened at a large refinery owned by Tesoro in Anacortes, Wash. In 2010, an explosion there killed seven workers.

In response to that and dozens of other accidents in recent years, the Occupational Safety and Health Administration and the U.S. Chemical Safety Board have issued harsh proclamations. "Bluntly speaking, your workers are dying on the job and it has to stop," said Jordan Barab, OSHA deputy assistant secretary, to a 2010 conference of refinery and mining representatives. Barab later noted, "(OSHA) inspectors have found many facilities where safety programs that look good on paper don't follow through in practice." Subsequent inspections at 50 refineries produced an average of 17 worker-safety violations totaling nearly $2 million per facility.

OSHA and the Chemical Safety Board have urged companies to more closely adhere to 'Process Safety Management' regulations, which outline how to deal with toxic materials and potential spills, fires and releases. Both groups have also advocated wider use of automated systems that monitor operations.

But for all its tough talk, OSHA has spotty oversight and little regulatory pull with refineries. In 2010, OSHA secretary David Michaels called his agency's enforcement power "weak." Maximum fines for first-time safety violations are $7,000 -- pocket change for large oil companies. (Fines for repeat violations max out at $70,000, but are rarely issued.) OSHA's 2,000 inspectors are charged with the impossible task of monitoring 8 million jobsites across the country, with no system in place to track violations by companies that operate refineries in multiple states.

The hazards workers face are shared by the public. A 2011 study by the Center for Public Integrity, for example, found that 20 percent of Americans live near enough to a refinery to be sickened or killed in the event of a release of hydrofluoric acid, a highly toxic substance used in oil refining. So as OSHA pushes for greater workplace safety, what protocols are being put in place to safeguard communities? In the case of Richmond, not many, says Greg Karras, senior scientist with the watchdog group Communities for a Better Environment. He points to the refinery's air-monitoring system, which was designed to measure average ambient conditions rather than sudden pollutant spikes emitted from events like fires: "You can't find what you can't measure for."

Meanwhile, every day is a possible emergency for the hundreds of thousands of Westerners living near refineries. Even under 'normal' operating conditions, the list of hazardous emissions pouring from refinery stacks -- not to mention 'fugitive' emissions from leaking pipes -- is long. In addition to the usual suspects, sulfur dioxide, hydrogen sulfide and large particulates, all of which contribute to asthma and heart disease, there are heavy metals and carcinogens such as benzene, toluene and hydrocyanic acid.

Though "shelter in place" may be an effective -- if politically fraught -- short-term response to accidental releases of dangerous chemicals, simply living near a refinery may prove unexpectedly hazardous over the long term. A 2008 study by researchers at the University of California, Berkeley, for example, found elevated levels of vanadium, nickel and heavy particulates derived from oil refining in Richmond's air near the Chevron refinery. But the team found an even wider array of these chemicals inside homes beside the plant. Richmond resident Malik Seneferu, who spoke at the Chevron town hall meeting, articulated the worst fears of those living in the shadow of the oil industry: "Someone earlier said if Chevron leaves, we all die. ... But if Chevron stays, we all die, too."

D3. Video Footage

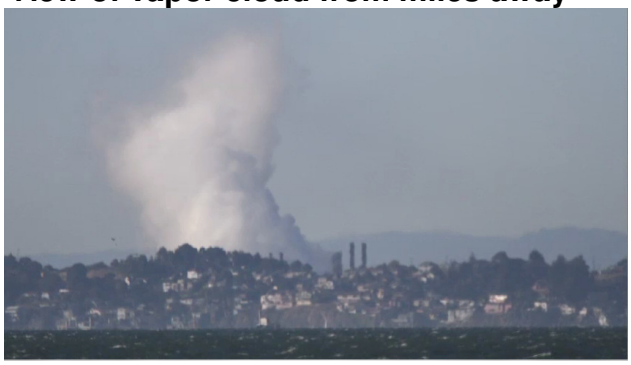
U.S. Chemical Safety Board news story video footage:

Hydrocarbon gas leak and ignition

Hydrocarbon vapor cloud and further ignition

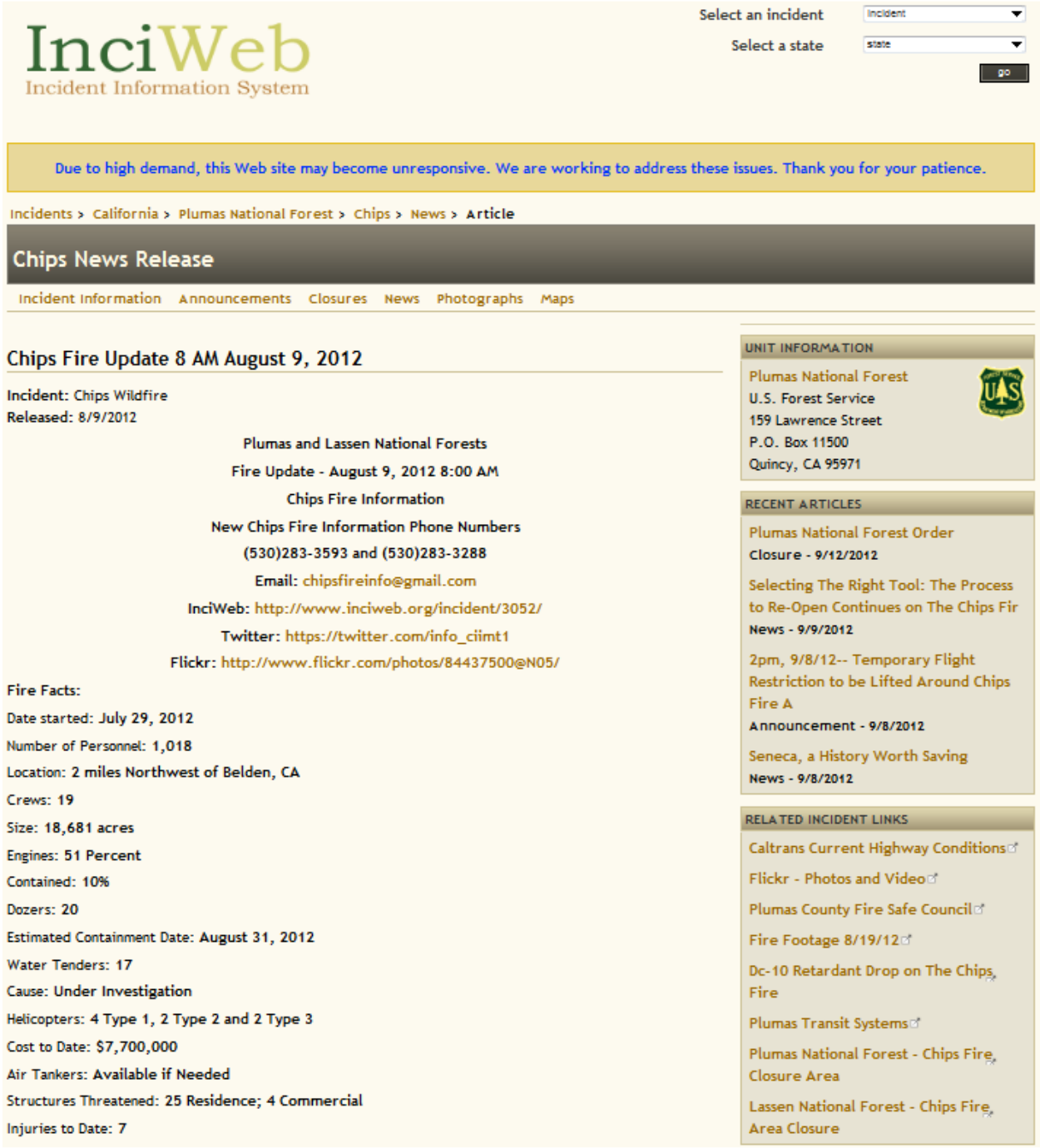
Hydrocarbon vapor cloud and flames

View of vapor cloud from miles away



View of the refinery fire smoke plume dispersing

D4. New releases and articles on the Chips, Bear, and Piute Complex wildfires



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Incidents > California > Plumas National Forest > Chips > News > Article

Chips News Release

Incident Information | Announcements | Closures | News | Photographs | Maps

Chips Fire Update 8 AM August 9, 2012

Incident: Chips Wildfire
Released: 8/9/2012

Plumas and Lassen National Forests

Fire Update - August 9, 2012 8:00 AM

Chips Fire Information

New Chips Fire Information Phone Numbers

(530)283-3593 and (530)283-3288

Email: chipsfireinfo@gmail.com

InciWeb: http://www.inciweb.org/incident/3052/

Twitter: https://twitter.com/info_ciimt1

Flickr: http://www.flickr.com/photos/84437500@N05/

Fire Facts:

Date started: July 29, 2012
Number of Personnel: 1,018
Location: 2 miles Northwest of Belden, CA
Crews: 19
Size: 18,681 acres
Engines: 51 Percent
Contained: 10%
Dozers: 20
Estimated Containment Date: August 31, 2012
Water Tenders: 17
Cause: Under Investigation
Helicopters: 4 Type 1, 2 Type 2 and 2 Type 3
Cost to Date: $7,700,000
Air Tankers: Available if Needed
Structures Threatened: 25 Residence; 4 Commercial
Injuries to Date: 7

UNIT INFORMATION

Plumas National Forest
U.S. Forest Service
159 Lawrence Street
P.O. Box 11500
Quincy, CA 95971

RECENT ARTICLES

Plumas National Forest Order
Closure - 9/12/2012

Selecting The Right Tool: The Process to Re-Open Continues on The Chips Fir
News - 9/9/2012

2pm, 9/8/12-- Temporary Flight Restriction to be Lifted Around Chips Fire A
Announcement - 9/8/2012

Seneca, a History Worth Saving
News - 9/8/2012

RELATED INCIDENT LINKS

Caltrans Current Highway Conditions
Flickr - Photos and Video
Plumas County Fire Safe Council
Fire Footage 8/19/12
Dc-10 Retardant Drop on The Chips Fire
Plumas Transit Systems
Plumas National Forest - Chips Fire Closure Area
Lassen National Forest - Chips Fire Area Closure

Today's Update:

Crews successfully initiated firing operations last night on the fire's northwest flank near Castle Rock. The firing (back-fire) add an area of black between the constructed line and the main fire in Soda Creek. Crews will continue to improve line on the fire's west and north flanks today. On the fires active northeast flank, crews are constructing handline and installing hose lines along Mosquito Creek to contain the fire where it had escaped containment lines.

The spot fire on the east side of the Feather River's north fork at Red Hill is now within containment lines. The fire is expected to reach Highway 70 today which may result in an increase in containment on the fire. Motorists should use caution and expect minor delays when travelling the Feather River Canyon due to fire and firefighter activity in the area.

Construction of contingency line along the Humbug Road will continue today. Contingency line construction has been initiated between the Yellow Creek area and Butt Lake, and from Butt Lake south towards Cherry Hill. Contingency lines are installed as an extra measure of protection for important values at risk and will only be used should the fire overcome primary containment lines that are in place.

Fire Behavior and Smoke:

Fuels moisture remains critically low and potential for extreme fire behavior and spotting continues. The hot dry weather pattern with strong up-canyon southwest winds may challenge containment lines on the northeast flank. Smoke will continue to push northeast from mid-morning into the evening hours.

Public Safety:

The California Department of Transportation is implementing traffic controls along Highway 70 due to safety concerns. Travelers should check Highway 70 conditions regularly (800-427-ROAD / www.dot.ca.gov). Motorists should expect delays and need to anticipate firefighting personnel and apparatus on the road in the vicinity of the fire.

Smoke will continue to pose health concerns for the public. Residents are encouraged to visit the "Protect Yourself from Smoke" website for smoke protection information at http://www.cdc.gov/Features/Wildfires/. Local air quality conditions and forecasts are available at http://airnow.gov/index.cfm action=airnow.main.

For tips on how to prepare for a potential evacuation and what to do if you are evacuated, residents in and near evacuation areas are encouraged to visit the "Ready, Set, Go" website at http://www.inciweb.org/incident/article/3052/15480/.

Power Outages:

To report and get updates on power outages please call PG&E's 24-hour emergency and customer service line: 1-800-743-5002.

Evacuations and Closures:

Butt Valley Reservoir recreation facilities administered by PG&E (Ponderosa Flat Campground, Cool Springs Campground, Ray Adams Day Use Area and Boat Launch, as well as Yellow Creek Campground) are closed due to the fire.

Sheriff's voluntary evacuations are in place for the Rush Creek area and an area south of Highway 89 that includes Butt Valley Reservoir and Humbug Reservoir. Residents between Tobin and Twain on Highway 70 are under a Sheriff's advisement to begin developing evacuation plans. This area includes Belden, Maggie's Trailer Park and Little Haven.

A hard closure remains in place along Caribou Road from Highway 70 to Butt Lake. Gansner Bar, North Fork, and Queen Lily USFS campgrounds remain closed. The Little Grizzly dispersed camping area and High Lakes OHV area are also closed. The communities of Meadow Valley, Chester, Canyon Dam, Greenville, and Susanville area are not threatened at this time, nor are those west of the fire area including Paradise, Jarbo Gap, and Concow.

In the interest of firefighter and public safety, the Plumas National Forest has expanded the original closure area due to fire growth. A fire closure area has also been established for Lassen National Forest. Both closure areas will remain in place until the area is safe to enter. Please see the Forest Orders and closure maps on InciWeb (address above). Pacific Crest Trail hikers may bypass the affected area by hiking Highway 70/89 or catching a bus with Plumas Transit to Chester, CA (weekdays only).

Motorists are encouraged to use caution on Highway 70 in the area of the fire.

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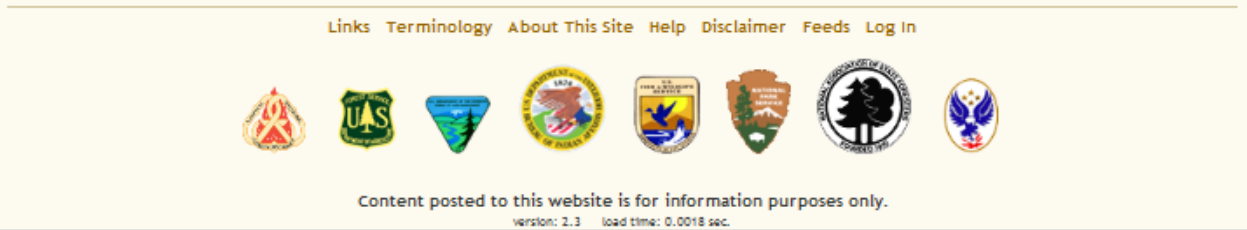

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Chips Fire rages on

Feather Publishing
8/8/2012 10:00 p.m. update

Crews were successful today in controlling spot fires on the north flank of the fire in the area of Cottonwood Meadow. Firefighters also were able to contain multiple spot fires west of the Caribou Junction on Highway 70. A contingency line has been initiated from the Yellow Creek area to Butt Lake should the fire escape primary containment lines on the fire's northeast flank. A north flank contingency line along Humbug Road is also under construction.

Containment objectives for the Chips Fire are to keep the fire south of Humbug Summit Road, north of Highway 70 and Tobin, west of the Butt Lake transmission lines, and East of Philbrook Reservoir. Crews are stationed in communities along the Feather River Canyon to provide structure protection.

Acreage remains the same because mapping flights were unable to safely fly over the fire area due to heavy smoke. Tonight's winds are forecasted to shift from the southwest to down-canyon winds after 11:00 PM. Smoke is likely to settle into the canyon.

The California Department of Transportation is implementing traffic controls along Highway 70 due to safety concerns. Travelers should check Highway 70 conditions regularly (800-427-ROAD / www.dot.ca.gov). Motorists should expect delays and need to anticipate firefighting personnel and apparatus on the road in the vicinity of the fire.

Smoke will continue to pose health concerns for the public. Residents are encouraged to visit the "Protect Yourself from Smoke" website for smoke protection information at http://www.cdc.gov/Features/Wildfires/. Local air quality conditions and forecasts are available at http://airnow.gov/index.cfm?action=airnow.main.

For tips on how to prepare for a potential evacuation and what to do if you are evacuated, residents in and near evacuation areas are encouraged to visit the "Ready, Set, Go" website at http://www.inciweb.org/incident/article/3052/15480/.

8/8/2012 10:00 a.m. update

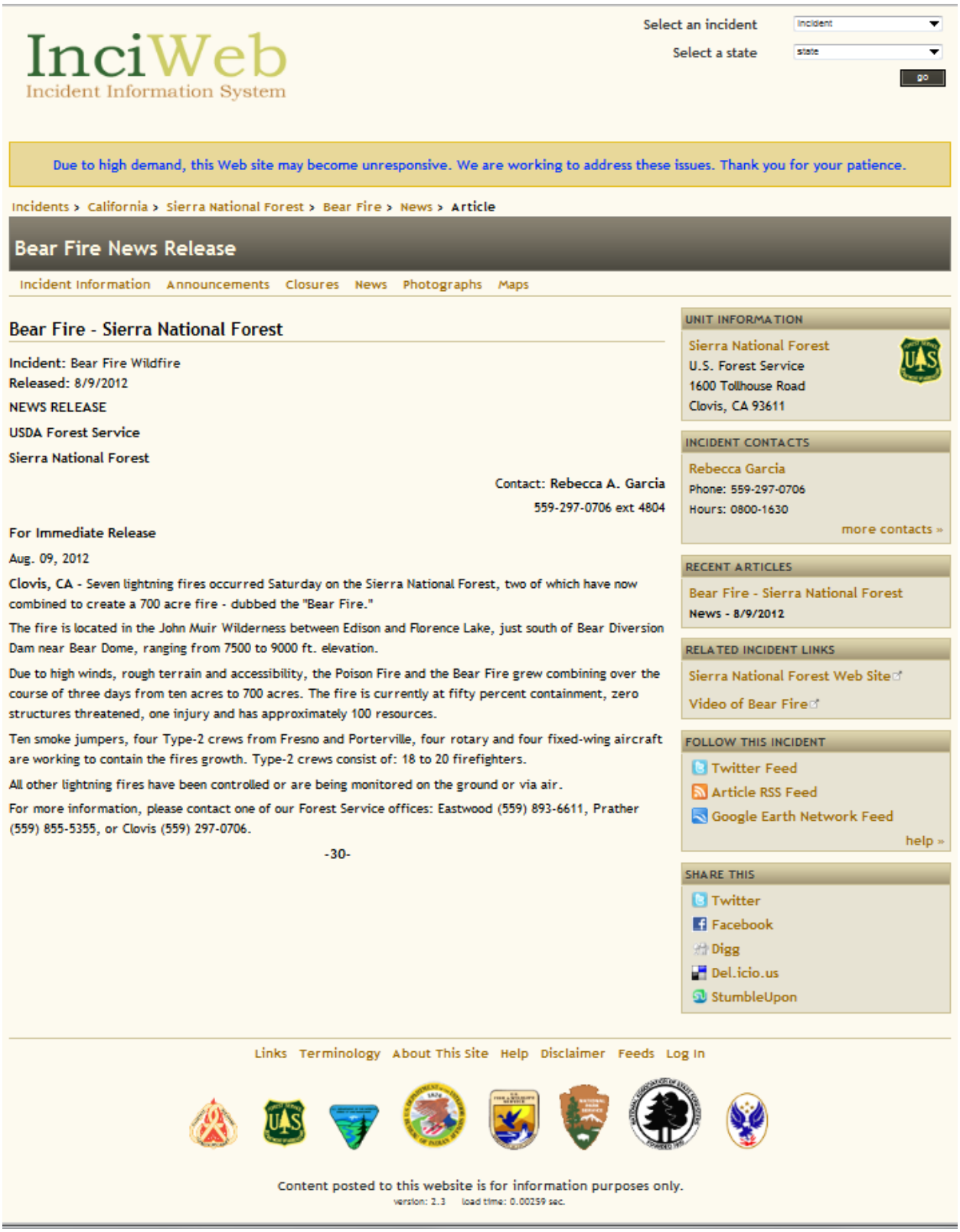
The Chips Fire is now 18,000 acres and remains just 10% contained.

Today crews will continue to aggressively attack an area where the fire escaped containment lines into the Mosquito Creek drainage. Aircraft will assist throughout the day by dropping water on hot spots near the fire's advancing edge as smoke conditions allow.

The fire is expected to slowly creep downslope towards Highway 70 on the southern flank where crews will mop-up along the line to secure additional containment. Fire activity along the western flank of the fire was minimal last night and crews will resume construction and improvement of western flank containment lines.

Containment objectives for the Chips Fire are to keep the fire south of Humbug Summit Road, north of Highway 70 and Tobin, west of the Butt Lake transmission lines, and East of Philbrook Reservoir. Crews are stationed in communities along the Feather River Canyon to provide structure protection.

Contingency lines beyond the primary containment lines are planned and the north contingency line along Humbug Road is now under construction.



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Incidents > California > Sierra National Forest > Bear Fire > News > Article

Bear Fire News Release

Incident Information | Announcements | Closures | News | Photographs | Maps

Bear Fire - Sierra National Forest

Incident: Bear Fire Wildfire
Released: 8/9/2012

NEWS RELEASE

USDA Forest Service

Sierra National Forest

Contact: Rebecca A. Garcia
559-297-0706 ext 4804

For Immediate Release

Aug. 09, 2012

Clovis, CA - Seven lightning fires occurred Saturday on the Sierra National Forest, two of which have now combined to create a 700 acre fire - dubbed the "Bear Fire."

The fire is located in the John Muir Wilderness between Edison and Florence Lake, just south of Bear Diversion Dam near Bear Dome, ranging from 7500 to 9000 ft. elevation.

Due to high winds, rough terrain and accessibility, the Poison Fire and the Bear Fire grew combining over the course of three days from ten acres to 700 acres. The fire is currently at fifty percent containment, zero structures threatened, one injury and has approximately 100 resources.

Ten smoke jumpers, four Type-2 crews from Fresno and Porterville, four rotary and four fixed-wing aircraft are working to contain the fires growth. Type-2 crews consist of: 18 to 20 firefighters.

All other lightning fires have been controlled or are being monitored on the ground or via air.

For more information, please contact one of our Forest Service offices: Eastwood (559) 893-6611, Prather (559) 855-5355, or Clovis (559) 297-0706.

-30-

UNIT INFORMATION
Sierra National Forest
U.S. Forest Service
1600 Tollhouse Road
Clovis, CA 93611

INCIDENT CONTACTS
Rebecca Garcia
Phone: 559-297-0706
Hours: 0800-1630
more contacts »

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News - 8/9/2012

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NEWS RELEASE

Sequoia National Forest and Giant Sequoia National Monument

For Immediate Release
Date: August 9, 2012 Time: 9:00 AM

Piute Complex

Location: Clear Fire- 6 Miles South of Lake Isabella
Heald Fire-11 Miles East of Lake Isabella

Acres Burned: Clear Fire: 1,449 Heald Fire: 350
Containment: 50% on Clear, 75% on Heald
Fire Started: August 4, 2012
Cause: Lightning
Total personnel assigned to the Fire: 1060

Structures Threatened: 20
Structures Destroyed: 0
Injuries: 1

Summary
Crews are still working on the Piute incident and have established Fire Line Suppression Repair objectives.

Clear Fire: Fire Line Suppression Repair
On the Clear incident, fireline repair standards are being implemented to accomplish the objective of minimizing the potential for use of firelines as future trails or confusion regarding proper route, and minimizing erosion and sediment movement on the fire line. Crews will be ensuring all equipment, supplies, trash, flagging, ect. are removed from lines, travel routes, camps and helispots. Additional fire resources will be released from the incident throughout the day.

Heald Fire: The Heald Fire continues to experience minimal fire activity. Line construction is complete and fire crews will mop-up any hot spots remaining in the interior of the fire.

South Central Sierra Interagency Incident Management Team is assigned Piute Complex. The Incident Base Camp has been established at Camp Nine. For current fire information about the fires involved in the Piute Complex, please call the Fire Information Unit at 951-297-3493.

Closures

- Saddle Springs Road - between Bodfish-Caliente Rd and Piute Mountain Rd.
- Camp Nine – Camp ground and day use closed to the public.
- OHV Trail Closures due to the fires include:

Clear Fire		Heald Fire	
Clear Creek Trail	33E45	Dry Meadow Trail	34E31
Cold Springs Trail	33E68	Little Dry Trail	32E52
Libel Peak Trail	33E65	Willow Gulch Trail	34E41

Fire Information: 951-297-3493
For additional information visit: www.inciweb.org

South Central Sierra Interagency Incident Management Team

Piute Complex Fires Continue to Burn Near Bodfish

Two Major Lightning-Sparked Fires Burning Southeast of Lake Isabella

Posted: 08/05/2012

Two major fires that make up the Piute Complex fire continue to burn southeast of Lake Isabella in the Sequoia National Forest.

The fires were apparently started by dry lightning strikes Friday night, but they weren't reported until midday Saturday.

The first is the Clear Fire, burning near Bodfish. That fire has scorched more than 500 acres. No homes are threatened, but the community of Valley View is under structure protection.

Crews are attacking the fire from the ground and with water-dropping aircraft.

The second fire is the Heald Fire, burning near Kernville. That fire is burning in rough terrain, and is currently more than 300 acres in size.

Smoke jumpers, or parachuting firefighters, have been dropped into the rugged area to fight the fire by hand.

No containment is expected on either fire yet.

Kern County Fire crews were originally assisting with the fire, but the U.S. Forest Service then took over. USFS Public Information Officer Cody Norris tells 23ABC there is now a specialized Type II command team comprised of several crews from different fire agencies that took over at 6 p.m. Sunday.

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APPENDIX E: District Compliance Department Coverage

E1. District Compliance routine Inspections from August 6 through 10, 2012

Region	Date	Activity	Project Type
C	06-Aug-12	Initial Inspection	Synthetic Minor & Rule 2530 Sources
C	06-Aug-12	Initial Inspection	Title V Sources
C	06-Aug-12	Breakdown & Title V Deviation Investigation	Title V Sources
C	06-Aug-12	Start-up Inspection	Minor Sources
C	06-Aug-12	Start-up Inspection	Title V Sources
C	06-Aug-12	Legal Action	Title V Sources
C	06-Aug-12	Complaint Investigation	Agricultural Burning
C	06-Aug-12	Complaint Investigation	Other Open Burning (Barrels, etc)
C	06-Aug-12	Complaint Investigation	Other Open Burning (Barrels, etc)
C	06-Aug-12	Complaint Investigation	Regulation VIII (non-Vehicles)
C	06-Aug-12	Complaint Investigation	Regulation VIII (non-Vehicles)
C	06-Aug-12	Ongoing & Other Inspection	Gasoline Dispensing Facilities
C	06-Aug-12	Ongoing & Other Inspection	Asbestos
C	06-Aug-12	Ongoing & Other Inspection	Agricultural Burning
C	06-Aug-12	Follow-up Inspection	Gasoline Dispensing Facilities
C	06-Aug-12	Follow-up Inspection	Gasoline Dispensing Facilities
C	06-Aug-12	Aborted Inspection	Minor Sources
N	06-Aug-12	Initial Inspection	Minor Sources
N	06-Aug-12	Initial Inspection	Minor Sources
N	06-Aug-12	Start-up Inspection	Gasoline Dispensing Facilities
N	06-Aug-12	Complaint Investigation	Unpermitted Equipment
N	06-Aug-12	Complaint Investigation	Agricultural Burning
N	06-Aug-12	Ongoing & Other Inspection	Unpermitted Equipment
N	06-Aug-12	Ongoing & Other Inspection	Asbestos
N	06-Aug-12	Ongoing & Other Inspection	Asbestos
N	06-Aug-12	Ongoing & Other Inspection	Agricultural Burning
N	06-Aug-12	Ongoing & Other Inspection	Agricultural Burning
N	06-Aug-12	Follow-up Inspection	Synthetic Minor & Rule 2530 Sources
N	06-Aug-12	Follow-up Inspection	Agricultural Burning
N	06-Aug-12	Surveillance	Agricultural Burning
S	06-Aug-12	Initial Inspection	Gasoline Dispensing Facilities
S	06-Aug-12	Initial Inspection	Automotive Coating Operations
S	06-Aug-12	Initial Inspection	Automotive Coating Operations
S	06-Aug-12	Initial Inspection	Minor Sources

Region	Date	Activity	Project Type
S	06-Aug-12	Initial Inspection	CMP (Conservation Management Practices) Plans
S	06-Aug-12	Initial Inspection	Title V Sources
S	06-Aug-12	Complaint Investigation	Unpermitted Equipment
S	06-Aug-12	Complaint Investigation	Unpermitted Equipment
S	06-Aug-12	Complaint Investigation	Minor Sources
S	06-Aug-12	Complaint Investigation	Title V Sources
S	06-Aug-12	Ongoing & Other Inspection	Title V Sources
S	06-Aug-12	Follow-up Inspection	Synthetic Minor & Rule 2530 Sources
S	06-Aug-12	Follow-up Inspection	Gasoline Dispensing Facilities
S	06-Aug-12	Follow-up Inspection	Gasoline Dispensing Facilities
S	06-Aug-12	Follow-up Inspection	Automotive Coating Operations
S	06-Aug-12	Aborted Inspection	Minor Sources
S	06-Aug-12	Aborted Inspection	CMP (Conservation Management Practices) Plans
S	06-Aug-12	Aborted Inspection	Title V Sources
C	07-Aug-12	Initial Inspection	Gasoline Dispensing Facilities
C	07-Aug-12	Initial Inspection	Gasoline Dispensing Facilities
C	07-Aug-12	Initial Inspection	Minor Sources
C	07-Aug-12	Initial Inspection	Minor Sources
C	07-Aug-12	Initial Inspection	Minor Sources
C	07-Aug-12	Initial Inspection	District Portable Equipment Registration
C	07-Aug-12	Source Test Observation	Title V Sources
C	07-Aug-12	Complaint Investigation	Agricultural Burning
C	07-Aug-12	Ongoing & Other Inspection	Regulation VIII (non-Vehicles)
C	07-Aug-12	Follow-up Inspection	Minor Sources
C	07-Aug-12	Aborted Inspection	Synthetic Minor & Rule 2530 Sources
N	07-Aug-12	Initial Inspection	Minor Sources
N	07-Aug-12	Initial Inspection	Minor Sources
N	07-Aug-12	Initial Inspection	Minor Sources
N	07-Aug-12	Source Test Observation	Minor Sources
N	07-Aug-12	Start-up Inspection	Minor Sources
N	07-Aug-12	Complaint Investigation	ARB Portable Equipment Registration
N	07-Aug-12	Complaint Investigation	Agricultural Burning
N	07-Aug-12	Ongoing & Other Inspection	ARB Idling Diesel Inspection Program
N	07-Aug-12	Ongoing & Other Inspection	Minor Sources
N	07-Aug-12	Ongoing & Other Inspection	PEER (Permit Exempt Equipment Registration)
N	07-Aug-12	Ongoing & Other Inspection	Regulation VIII (non-Vehicles)
N	07-Aug-12	Follow-up Inspection	Gasoline Dispensing Facilities
N	07-Aug-12	Follow-up Inspection	Agricultural Burning
S	07-Aug-12	Initial Inspection	Synthetic Minor & Rule 2530 Sources

Region	Date	Activity	Project Type
S	07-Aug-12	Initial Inspection	Automotive Coating Operations
S	07-Aug-12	Initial Inspection	Minor Sources
S	07-Aug-12	Initial Inspection	Minor Sources
S	07-Aug-12	Initial Inspection	Minor Sources
S	07-Aug-12	Initial Inspection	Minor Sources
S	07-Aug-12	Source Test Observation	Title V Sources
S	07-Aug-12	Source Test Observation	Title V Sources
S	07-Aug-12	Start-up Inspection	Gasoline Dispensing Facilities
S	07-Aug-12	Start-up Inspection	Minor Sources
S	07-Aug-12	Legal Action	Minor Sources
S	07-Aug-12	Complaint Investigation	Unpermitted Equipment
S	07-Aug-12	Complaint Investigation	Regulation VIII (non-Vehicles)
S	07-Aug-12	Ongoing & Other Inspection	Minor Sources
S	07-Aug-12	Ongoing & Other Inspection	CMP (Conservation Management Practices) Plans
S	07-Aug-12	Ongoing & Other Inspection	Asbestos
S	07-Aug-12	Ongoing & Other Inspection	ARB Portable Equipment Registration
S	07-Aug-12	Follow-up Inspection	PEER (Permit Exempt Equipment Registration)
S	07-Aug-12	Aborted Inspection	Minor Sources
S	07-Aug-12	Aborted Inspection	Regulation VIII (non-Vehicles)
C	08-Aug-12	Initial Inspection	Synthetic Minor & Rule 2530 Sources
C	08-Aug-12	Initial Inspection	Synthetic Minor & Rule 2530 Sources
C	08-Aug-12	Initial Inspection	Gasoline Dispensing Facilities
C	08-Aug-12	Initial Inspection	Gasoline Dispensing Facilities
C	08-Aug-12	Initial Inspection	Automotive Coating Operations
C	08-Aug-12	Initial Inspection	Minor Sources
C	08-Aug-12	Initial Inspection	Title V Sources
C	08-Aug-12	Initial Inspection	Title V Sources
C	08-Aug-12	Initial Inspection	Title V Sources
C	08-Aug-12	Source Test Observation	Title V Sources
C	08-Aug-12	Source Test Observation	Title V Sources
C	08-Aug-12	Start-up Inspection	Minor Sources
C	08-Aug-12	Complaint Investigation	Automotive Coating Operations
C	08-Aug-12	Complaint Investigation	Other Open Burning (Barrels, etc)
C	08-Aug-12	Complaint Investigation	Regulation VIII (non-Vehicles)
C	08-Aug-12	Complaint Investigation	Regulation VIII (non-Vehicles)
C	08-Aug-12	Ongoing & Other Inspection	Asbestos
C	08-Aug-12	Follow-up Inspection	Gasoline Dispensing Facilities
C	08-Aug-12	Follow-up Inspection	Gasoline Dispensing Facilities
C	08-Aug-12	Follow-up Inspection	Minor Sources
C	08-Aug-12	Follow-up Inspection	Title V Sources

Region	Date	Activity	Project Type
C	08-Aug-12	Aborted Inspection	Title V Sources
N	08-Aug-12	Initial Inspection	Minor Sources
N	08-Aug-12	Initial Inspection	Minor Sources
N	08-Aug-12	Initial Inspection	Title V Sources
N	08-Aug-12	Breakdown & Title V Deviation Investigation	Title V Sources
N	08-Aug-12	Source Test Observation	Minor Sources
N	08-Aug-12	Complaint Investigation	Unpermitted Equipment
N	08-Aug-12	Complaint Investigation	Minor Sources
N	08-Aug-12	Complaint Investigation	Regulation VIII (non-Vehicles)
N	08-Aug-12	Ongoing & Other Inspection	Minor Sources
N	08-Aug-12	Ongoing & Other Inspection	Asbestos
N	08-Aug-12	Ongoing & Other Inspection	Asbestos
N	08-Aug-12	Ongoing & Other Inspection	Title V Sources
N	08-Aug-12	Ongoing & Other Inspection	ARB Portable Equipment Registration
N	08-Aug-12	Ongoing & Other Inspection	Agricultural Burning
N	08-Aug-12	Ongoing & Other Inspection	Regulation VIII (non-Vehicles)
N	08-Aug-12	Follow-up Inspection	Agricultural Burning
N	08-Aug-12	Aborted Inspection	Minor Sources
N	08-Aug-12	Aborted Inspection	Minor Sources
S	08-Aug-12	Initial Inspection	Gasoline Dispensing Facilities
S	08-Aug-12	Initial Inspection	Gasoline Dispensing Facilities
S	08-Aug-12	Initial Inspection	Automotive Coating Operations
S	08-Aug-12	Initial Inspection	Minor Sources
S	08-Aug-12	Initial Inspection	Minor Sources
S	08-Aug-12	Initial Inspection	Minor Sources
S	08-Aug-12	Source Test Observation	Title V Sources
S	08-Aug-12	Source Test Observation	Title V Sources
S	08-Aug-12	Start-up Inspection	Minor Sources
S	08-Aug-12	Complaint Investigation	Unpermitted Equipment
S	08-Aug-12	Complaint Investigation	Unpermitted Equipment
S	08-Aug-12	Complaint Investigation	CMP (Conservation Management Practices) Plans
S	08-Aug-12	Ongoing & Other Inspection	Asbestos
S	08-Aug-12	Ongoing & Other Inspection	ARB Portable Equipment Registration
S	08-Aug-12	Follow-up Inspection	Gasoline Dispensing Facilities
S	08-Aug-12	Follow-up Inspection	Minor Sources
S	08-Aug-12	Follow-up Inspection	Asbestos
S	08-Aug-12	Follow-up Inspection	Asbestos
S	08-Aug-12	Group Inspection	Minor Sources
S	08-Aug-12	Group Inspection	Asbestos

Region	Date	Activity	Project Type
S	08-Aug-12	Surveillance	Agricultural Burning
S	08-Aug-12	Aborted Inspection	Gasoline Dispensing Facilities
S	08-Aug-12	Aborted Inspection	Minor Sources
S	08-Aug-12	Aborted Inspection	Title V Sources
C	09-Aug-12	Initial Inspection	Synthetic Minor & Rule 2530 Sources
C	09-Aug-12	Initial Inspection	Gasoline Dispensing Facilities
C	09-Aug-12	Initial Inspection	Gasoline Dispensing Facilities
C	09-Aug-12	Initial Inspection	Minor Sources
C	09-Aug-12	Initial Inspection	Title V Sources
C	09-Aug-12	Initial Inspection	Title V Sources
C	09-Aug-12	Initial Inspection	Title V Sources
C	09-Aug-12	Complaint Investigation	Unpermitted Equipment
C	09-Aug-12	Complaint Investigation	Minor Sources
C	09-Aug-12	Complaint Investigation	Other Open Burning (Barrels, etc)
C	09-Aug-12	Complaint Investigation	Other Open Burning (Barrels, etc)
C	09-Aug-12	Complaint Investigation	Other Open Burning (Barrels, etc)
C	09-Aug-12	Complaint Investigation	Other Open Burning (Barrels, etc)
C	09-Aug-12	Complaint Investigation	Regulation VIII (non-Vehicles)
C	09-Aug-12	Complaint Investigation	Regulation VIII (non-Vehicles)
C	09-Aug-12	Ongoing & Other Inspection	Minor Sources
C	09-Aug-12	Ongoing & Other Inspection	ARB Portable Equipment Registration
C	09-Aug-12	Follow-up Inspection	Agricultural Burning
N	09-Aug-12	Initial Inspection	Minor Sources
N	09-Aug-12	Initial Inspection	Minor Sources
N	09-Aug-12	Initial Inspection	Minor Sources
N	09-Aug-12	Initial Inspection	Minor Sources
N	09-Aug-12	Initial Inspection	Minor Sources
N	09-Aug-12	Initial Inspection	PEER (Permit Exempt Equipment Registration)
N	09-Aug-12	Initial Inspection	CMP (Conservation Management Practices) Plans
N	09-Aug-12	Start-up Inspection	Minor Sources
N	09-Aug-12	Complaint Investigation	Unpermitted Equipment
N	09-Aug-12	Complaint Investigation	Regulation VIII (non-Vehicles)
N	09-Aug-12	Ongoing & Other Inspection	Asbestos
N	09-Aug-12	Follow-up Inspection	Agricultural Burning
N	09-Aug-12	Surveillance	Agricultural Burning
S	09-Aug-12	Initial Inspection	Gasoline Dispensing Facilities
S	09-Aug-12	Initial Inspection	Gasoline Dispensing Facilities
S	09-Aug-12	Initial Inspection	Minor Sources
S	09-Aug-12	Initial Inspection	Minor Sources
S	09-Aug-12	Initial Inspection	Minor Sources

Region	Date	Activity	Project Type
S	09-Aug-12	Initial Inspection	CMP (Conservation Management Practices) Plans
S	09-Aug-12	Initial Inspection	CMP (Conservation Management Practices) Plans
S	09-Aug-12	Source Test Observation	Minor Sources
S	09-Aug-12	Source Test Observation	Title V Sources
S	09-Aug-12	Start-up Inspection	Title V Sources
S	09-Aug-12	Legal Action	Gasoline Dispensing Facilities
S	09-Aug-12	Complaint Investigation	Unpermitted Equipment
S	09-Aug-12	Complaint Investigation	Unpermitted Equipment
S	09-Aug-12	Ongoing & Other Inspection	Unpermitted Equipment
S	09-Aug-12	Ongoing & Other Inspection	Gasoline Dispensing Facilities
S	09-Aug-12	Ongoing & Other Inspection	Minor Sources
S	09-Aug-12	Ongoing & Other Inspection	Title V Sources
S	09-Aug-12	Ongoing & Other Inspection	ARB Portable Equipment Registration
S	09-Aug-12	Ongoing & Other Inspection	Agricultural Burning
S	09-Aug-12	Ongoing & Other Inspection	Regulation VIII (non-Vehicles)
S	09-Aug-12	Follow-up Inspection	Gasoline Dispensing Facilities
S	09-Aug-12	Follow-up Inspection	Minor Sources
S	09-Aug-12	Follow-up Inspection	Minor Sources
S	09-Aug-12	Follow-up Inspection	Title V Sources
S	09-Aug-12	Group Inspection	Title V Sources
S	09-Aug-12	Aborted Inspection	Gasoline Dispensing Facilities
C	10-Aug-12	Complaint Investigation	Regulation VIII (Vehicles)

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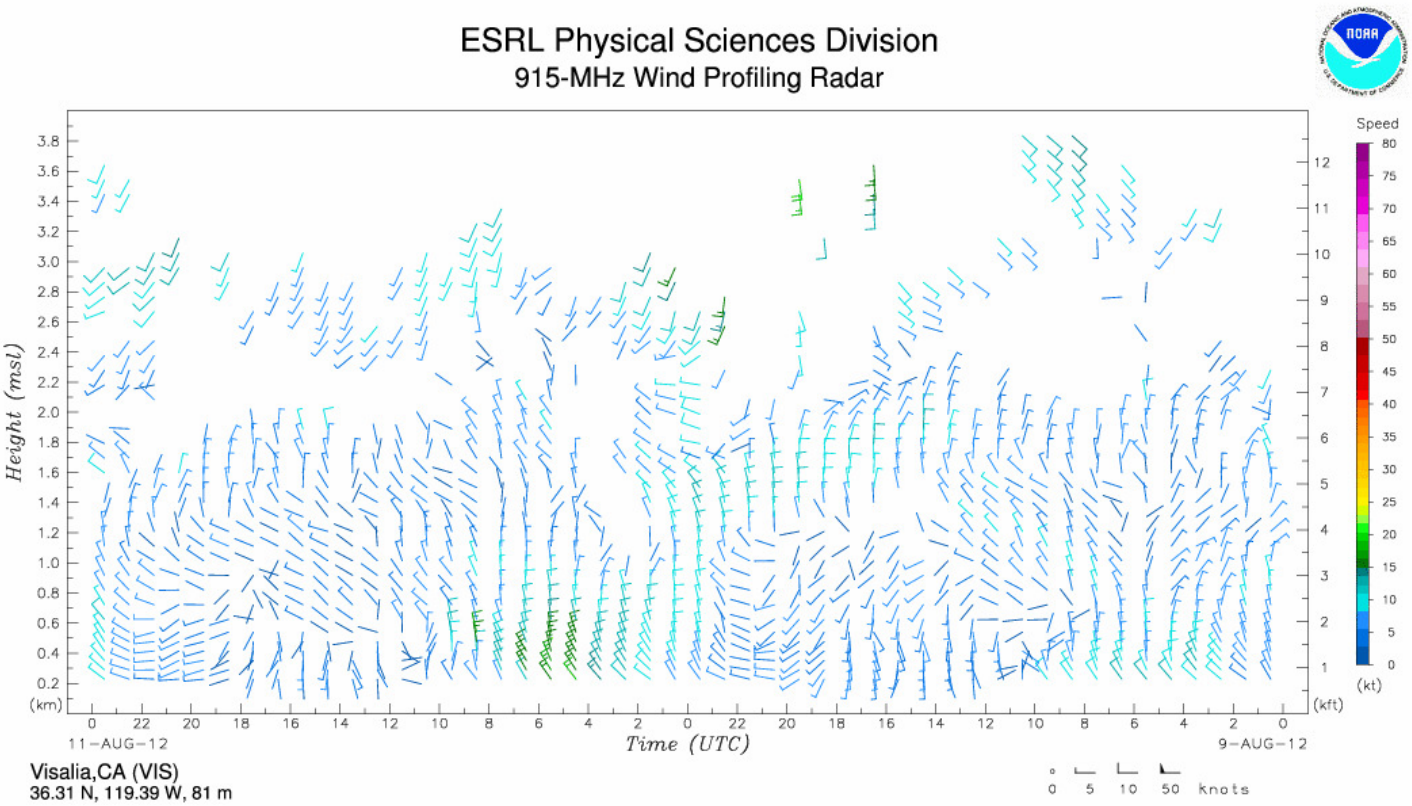
APPENDIX F: Weather Analysis

F1. Wind Profile

Time in UTC (Coordinated Universal Time, also abbreviated with "Z" or "GMT") is also called Greenwich Mean Time (Mean Solar Time at the Royal Observatory in Greenwich, England). Greenwich Mean Time is seven hours ahead of Pacific Daylight Time (PDT). For example, 12 UTC or 12 Z is 4 AM PST or 5 AM PDT. The lower air profiler was located in Visalia.

Wind barbs point in the direction "from" which the wind is blowing. A circle represents calm conditions. Flags (straight lines) attached at the end of the wind barbs indicate wind speed. Each short flag represents 5 knots, and each long flag represents 10 knots. A triangular flag at the end of a wind barb represents a 50-knot wind. A long flag and a short flag represent 15 knots, simply by adding the value of each flag together (10 knots + 5 knots = 15 knots). The color-coded wind speed scale is also provided to the right of the profiler.

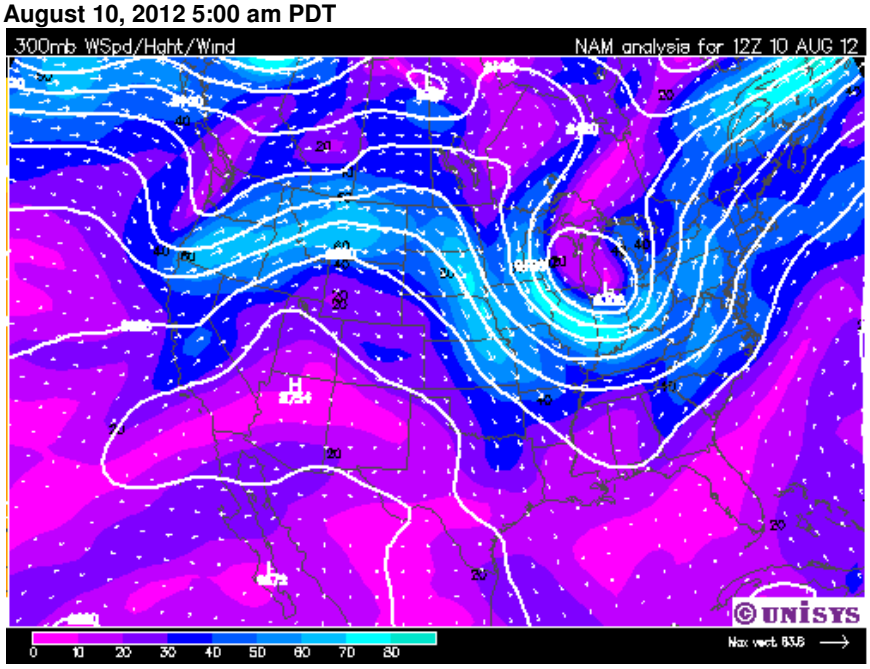


F2. Weather Charts

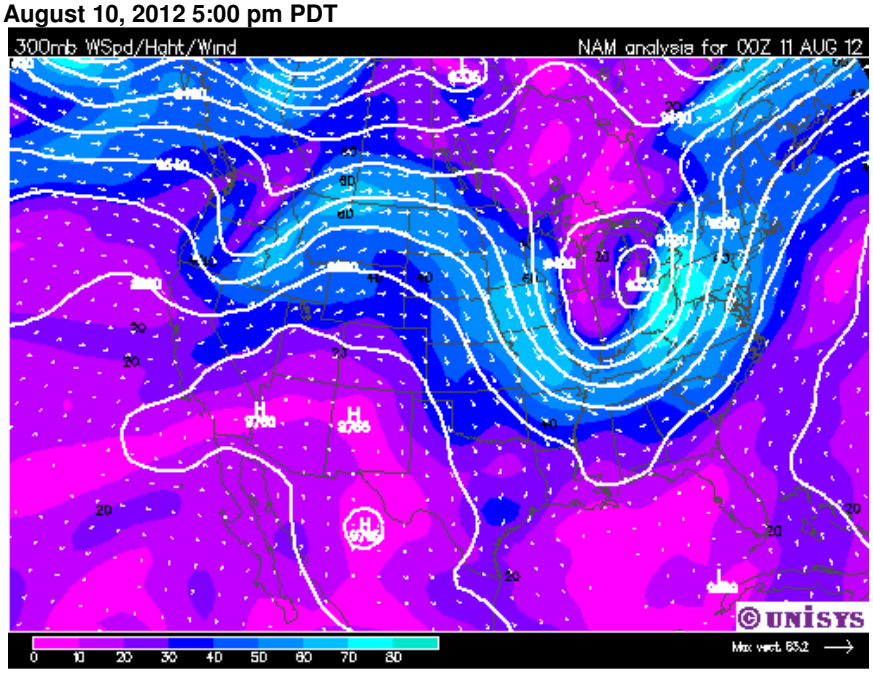
Upper-air analysis (approximately 30,000 feet above ground level) on August 10, 2012

The upper air analysis showed a weak Jet-stream up to 40 knots positioned over California through the day which correlated with light winds at the surface.

August 10, 2012 5:00 am PDT



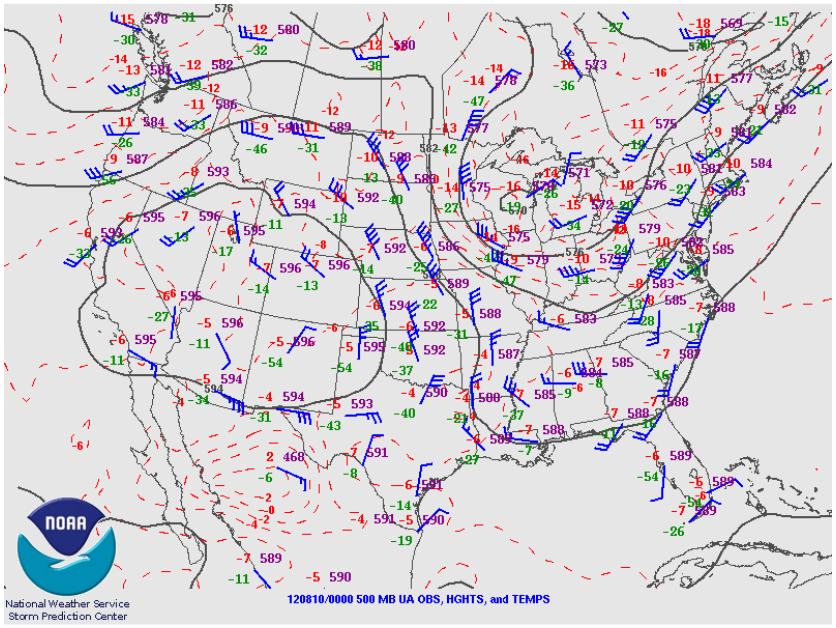
August 10, 2012 5:00 pm PDT



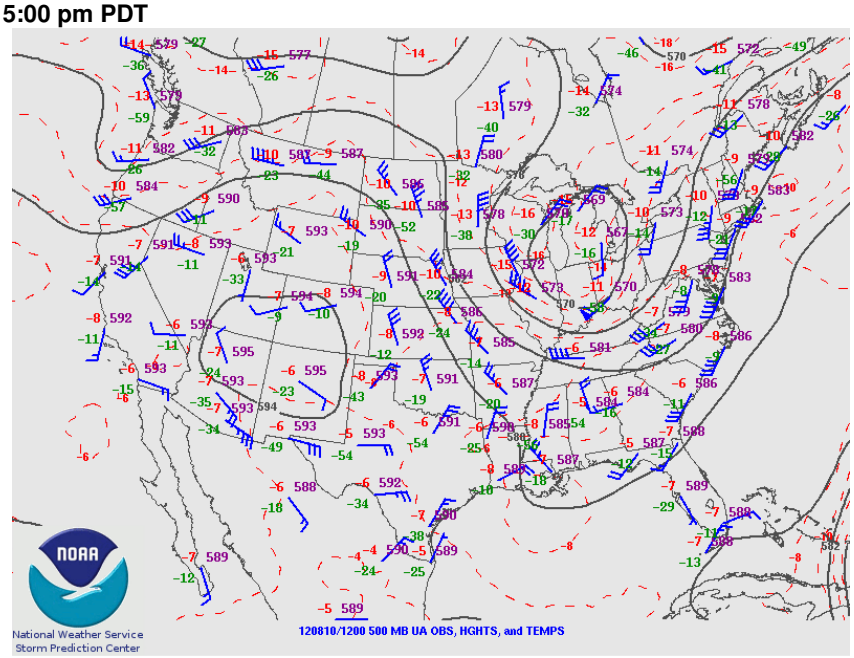
Upper-air analysis (approximately 18,000 feet above ground level) on August 10, 2012

The upper air analysis showed a strong ridge of high pressure over the western U.S which produced stable conditions over California. A weak trough of low pressure was beginning to move into the Pacific Northwest.

5:00 am PDT



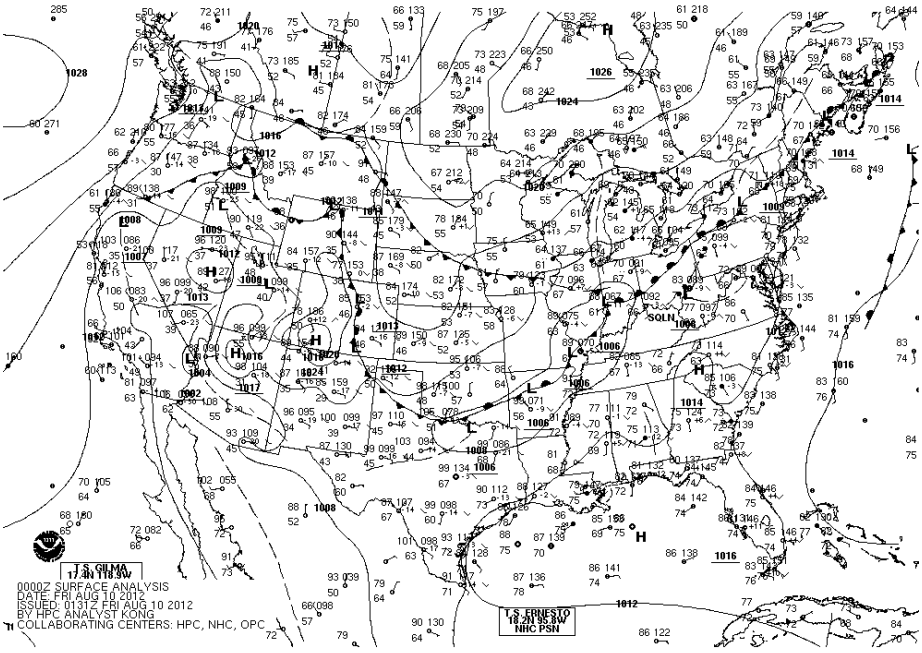
5:00 pm PDT



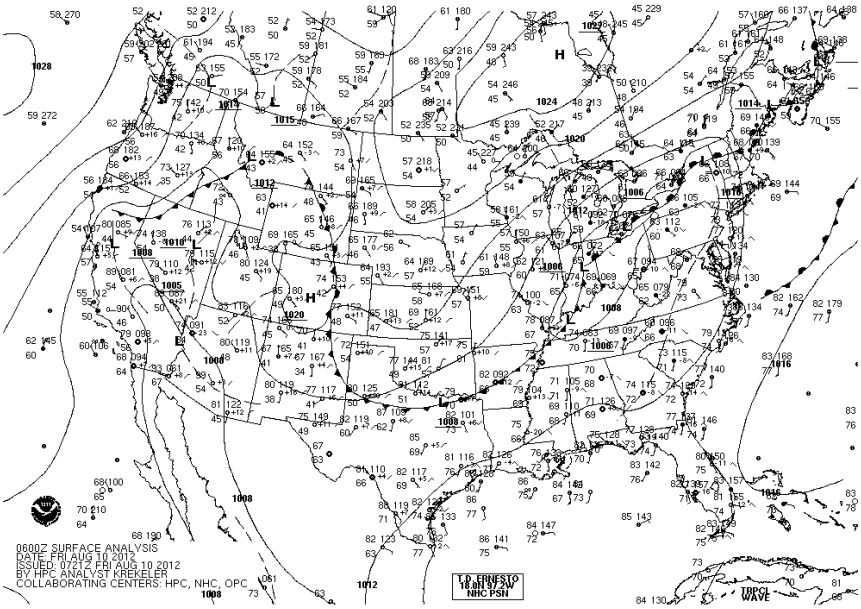
Surface Analysis

The surface analysis charts from 5:00 PM PDT August 9, 2012 through 5:00 PM PDT August 10, 2012 showed high pressure was centered over the Four Corners Region and off the west coast. Thermal lows were over central and southern California. Conditions were conducive to hot temperatures and light thermally driven winds in the San Joaquin Valley.

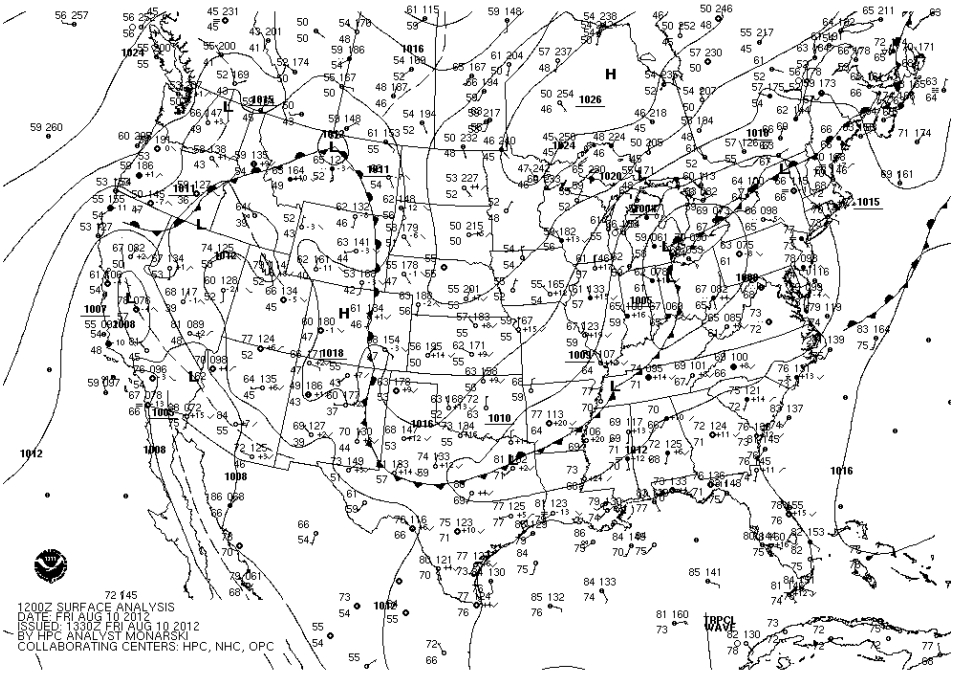
August 9, 2012 5:00 PM PDT



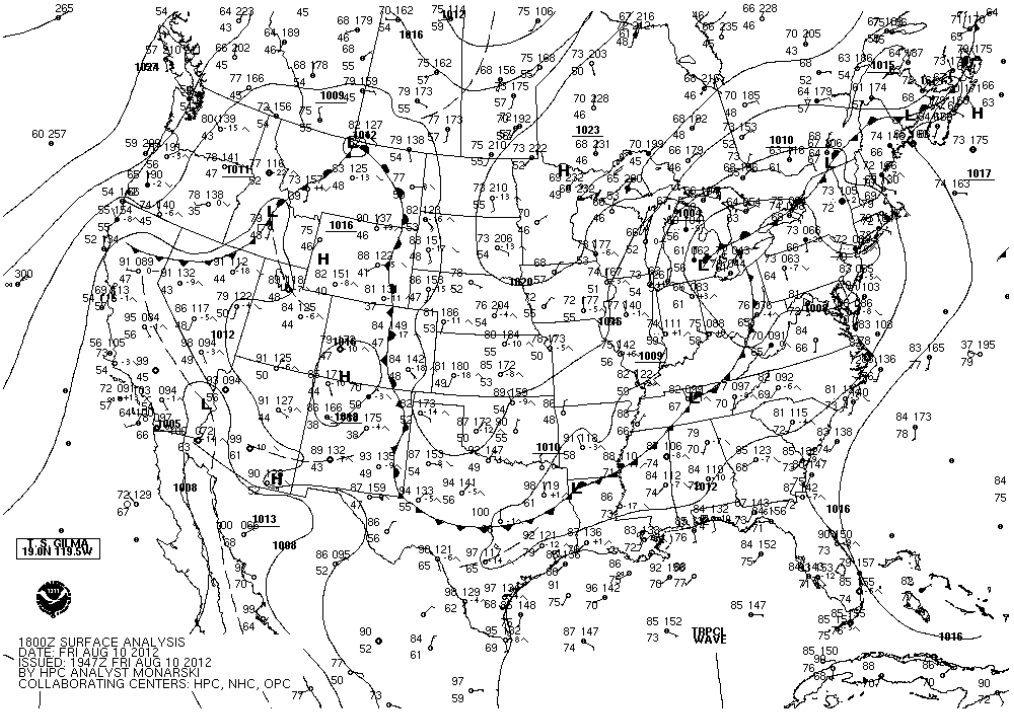
August 9, 2012 11:00 PM PDT



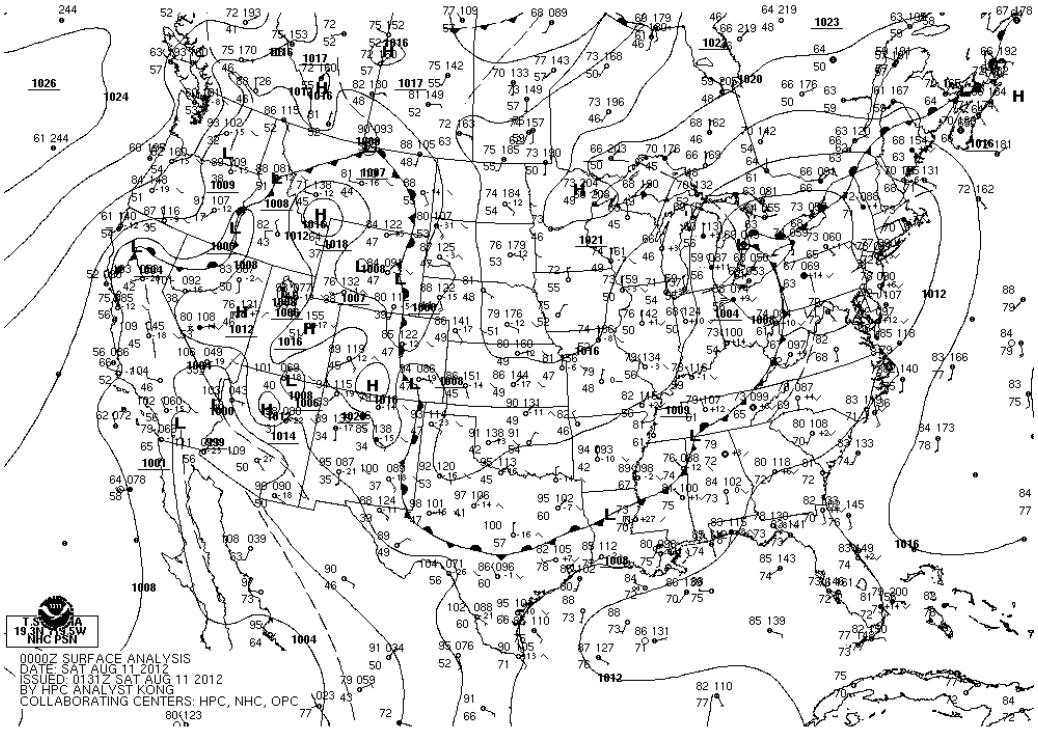
August 10, 2012 5:00 AM PDT



August 10, 2012 11:00 AM PDT



August 10, 2012 5:00 PM PDT



F3. Surface Observations

District Air Monitoring Site: Fresno – Drummond

Fresno-Drummond Wind Observations			
Date	Time	Wind Speed MPH	Wind Direction
10-Aug-12	0:00	4.3	NW
10-Aug-12	1:00	4.0	ENE
10-Aug-12	2:00	4.5	E
10-Aug-12	3:00	3.1	NE
10-Aug-12	4:00	6.3	E
10-Aug-12	5:00	3.6	ENE
10-Aug-12	6:00	5.8	E
10-Aug-12	7:00	9.0	ESE
10-Aug-12	8:00	9.0	ESE
10-Aug-12	9:00	7.4	SE
10-Aug-12	10:00	6.9	S
10-Aug-12	11:00	8.1	W
10-Aug-12	12:00	13.2	WSW
10-Aug-12	13:00	13.0	WNW
10-Aug-12	14:00	15.0	WNW
10-Aug-12	15:00	15.2	NW
10-Aug-12	16:00	15.4	NW
10-Aug-12	17:00	16.1	NNW
10-Aug-12	18:00	10.0	WNW
10-Aug-12	19:00	8.3	WNW
10-Aug-12	20:00	8.7	NW
10-Aug-12	21:00	8.7	WNW
10-Aug-12	22:00	10.0	W
10-Aug-12	23:00	9.2	WNW

The Paradise weather observation station is located in the foothills below (west of) the Chips Fire.

PARADISE *(PDE)*		
Elevation: 1750' · FEATHER R basin		
Operator: CA Dept of Water Resources		
Provisional data, subject to change.		
Date / Time	**Wind Speed MPH**	**Wind Direction**
8/3/2013 0:00	1	NE
8/3/2013 1:00	2	E
8/3/2013 2:00	3	ESE
8/3/2013 3:00	1	E
8/3/2013 4:00	1	N
8/3/2013 5:00	1	NNE
8/3/2013 6:00	2	N
8/3/2013 7:00	1	NE
8/3/2013 8:00	0	E
8/3/2013 9:00	2	N
8/3/2013 10:00	2	SSE
8/3/2013 11:00	3	N
8/3/2013 12:00	8	SW
8/3/2013 13:00	2	NW
8/3/2013 14:00	3	NNW
8/3/2013 15:00	1	S
8/3/2013 16:00	4	SSE
8/3/2013 17:00	8	SSE
8/3/2013 18:00	4	S
8/3/2013 19:00	1	WSW
8/3/2013 20:00	1	NNE
8/3/2013 21:00	1	ESE
8/3/2013 22:00	1	NNE
8/3/2013 23:00	1	SW
8/4/2013 0:00	2	SE
8/4/2013 1:00	0	NNE
8/4/2013 2:00	1	NNW
8/4/2013 3:00	1	E
8/4/2013 4:00	1	NNE
8/4/2013 5:00	1	NNE
8/4/2013 6:00	2	NNE

PARADISE *(PDE)*		
Date / Time	**Wind Speed**	**Wind Direction**
8/4/2013 7:00	1	NNE
8/4/2013 8:00	1	SE
8/4/2013 9:00	0	CALM
8/4/2013 10:00	2	S
8/4/2013 11:00	2	SSW
8/4/2013 12:00	6	N
8/4/2013 13:00	2	W
8/4/2013 14:00	1	NW
8/4/2013 15:00	4	S
8/4/2013 16:00	2	WSW
8/4/2013 17:00	1	S
8/4/2013 18:00	4	SSE
8/4/2013 19:00	2	SSW
8/4/2013 20:00	1	ESE
8/4/2013 21:00	0	CALM
8/4/2013 22:00	2	NE
8/4/2013 23:00	1	NNE
8/5/2013 0:00	0	NW
8/5/2013 1:00	2	N
8/5/2013 2:00	0	E
8/5/2013 3:00	0	E
8/5/2013 4:00	2	NNW
8/5/2013 5:00	2	N
8/5/2013 6:00	1	NNE
8/5/2013 7:00	0	CALM
8/5/2013 8:00	1	ESE
8/5/2013 9:00	2	SSE
8/5/2013 10:00	2	W
8/5/2013 11:00	3	SSW
8/5/2013 12:00	3	SSW
8/5/2013 13:00	2	W
8/5/2013 14:00	2	SE
8/5/2013 15:00	1	SSW
8/5/2013 16:00	2	SW
8/5/2013 17:00	1	W
8/5/2013 18:00	3	SW
8/5/2013 19:00	3	SSE
8/5/2013 20:00	1	NE

PARADISE *(PDE)*		
Date / Time	**Wind Speed**	**Wind Direction**
8/5/2013 21:00	1	N
8/5/2013 22:00	1	SE
8/5/2013 23:00	2	E
8/6/2013 0:00	2	NW
8/6/2013 1:00	1	ENE
8/6/2013 2:00	2	NNE
8/6/2013 3:00	1	N
8/6/2013 4:00	2	NNE
8/6/2013 5:00	1	NNW
8/6/2013 6:00	0	SSE
8/6/2013 7:00	1	S
8/6/2013 8:00	1	SE
8/6/2013 9:00	1	NW
8/6/2013 10:00	3	SE
8/6/2013 11:00	5	SSW
8/6/2013 12:00	6	SSW
8/6/2013 13:00	3	SSE
8/6/2013 14:00	4	SSE
8/6/2013 15:00	3	ESE
8/6/2013 16:00	4	SSE
8/6/2013 17:00	7	SSE
8/6/2013 18:00	5	E
8/6/2013 19:00	3	SE
8/6/2013 20:00	2	SSE
8/6/2013 21:00	0	NNE
8/6/2013 22:00	1	E
8/6/2013 23:00	1	SE
8/7/2013 0:00	1	E
8/7/2013 1:00	1	ESE
8/7/2013 2:00	2	NNE
8/7/2013 3:00	1	WNW
8/7/2013 4:00	1	NNE
8/7/2013 5:00	4	S
8/7/2013 6:00	1	SSW
8/7/2013 7:00	0	WNW
8/7/2013 8:00	1	WSW
8/7/2013 9:00	4	S
8/7/2013 10:00	3	S

PARADISE *(PDE)*		
Date / Time	**Wind Speed**	**Wind Direction**
8/7/2013 11:00	4	W
8/7/2013 12:00	1	S
8/7/2013 13:00	5	SSW
8/7/2013 14:00	4	SSE
8/7/2013 15:00	8	SE
8/7/2013 16:00	3	ESE
8/7/2013 17:00	3	SE
8/7/2013 18:00	2	SSW
8/7/2013 19:00	3	SE
8/7/2013 20:00	0	S
8/7/2013 21:00	0	CALM
8/7/2013 22:00	2	NNE
8/7/2013 23:00	1	NNE
8/8/2013 0:00	2	NNE
8/8/2013 1:00	2	N
8/8/2013 2:00	2	N
8/8/2013 3:00	0	ENE
8/8/2013 4:00	1	SE
8/8/2013 5:00	1	SSE
8/8/2013 6:00	2	CCE
8/8/2013 7:00	1	NNE
8/8/2013 8:00	1	WSW
8/8/2013 9:00	1	S
8/8/2013 10:00	3	NW
8/8/2013 11:00	4	SSE
8/8/2013 12:00	2	SE
8/8/2013 13:00	5	SSW
8/8/2013 14:00	4	SSE
8/8/2013 15:00	7	SW
8/8/2013 16:00	1	ENE
8/8/2013 17:00	3	ESE
8/8/2013 18:00	1	S
8/8/2013 19:00	1	SSW
8/8/2013 20:00	1	ESE
8/8/2013 21:00	1	NW
8/8/2013 22:00	1	N
8/8/2013 23:00	1	NNE
8/9/2013 0:00	1	NNE

PARADISE *(PDE)*		
Date / Time	**Wind Speed**	**Wind Direction**
8/9/2013 1:00	2	NNE
8/9/2013 2:00	0	NNE
8/9/2013 3:00	1	SE
8/9/2013 4:00	2	NNE
8/9/2013 5:00	0	CALM
8/9/2013 6:00	1	E
8/9/2013 7:00	0	NW
8/9/2013 8:00	0	ESE
8/9/2013 9:00	1	WNW
8/9/2013 10:00	3	S
8/9/2013 11:00	4	S
8/9/2013 12:00	2	E
8/9/2013 13:00	2	WNW
8/9/2013 14:00	1	ESE
8/9/2013 15:00	2	WNW
8/9/2013 16:00	6	SE
8/9/2013 17:00	3	SSW
8/9/2013 18:00	4	WSW
8/9/2013 19:00	4	SSE
8/9/2013 20:00	1	SSE
8/9/2013 21:00	2	ESE
8/9/2013 22:00	1	N
8/9/2013 23:00	1	NE

Past Weather Conditions for KSCK Stockton Metro Airport (NWS/FAA)

Observations prior to selected time: August 10, 2012 - 23:59 PDT

Tabular Listing: August 9, 2012 - 22:59 through August 10, 2012 - 23:59 PDT

Time(PDT)	Temperature	Dew Point	Relative Humidity	Wind Speed	Wind Direction	Quality check	Pressure	Sea level pressure	Altimeter	Weather conditions	Visibility
	° F	° F	%	mph			in	in	in		miles
23:55	73.0	48.9	43	5	NNW	OK	29.68	29.70	29.71	clear	10.00
22:55	80.1	50.0	35	7	WNW	OK	29.67	29.70	29.70	clear	10.00
21:55	82.9	48.9	31	7	W	OK	29.67	29.70	29.70	clear	10.00
20:55	89.1	53.1	29	8	WNW	OK	29.66	29.69	29.69	clear	10.00
19:55	93.0	48.0	22	9	WNW	OK	29.65	29.68	29.68	clear	10.00
18:55	98.1	48.9	19	8	WNW	OK	29.64	29.67	29.67	clear	10.00
17:55	102.0	45.0	15	10	NW	OK	29.64	29.67	29.67	clear	10.00
16:55	102.9	50.0	17	7	WNW	OK	29.66	29.68	29.69	clear	10.00
15:55	102.9	46.9	15	8	NW	OK	29.68	29.70	29.71	clear	10.00
14:55	100.0	53.1	21	6		OK	29.69	29.72	29.72	clear	10.00
13:55	96.1	61.0	32	7	NW	OK	29.72	29.75	29.75	clear	10.00
12:55	93.0	59.0	32	7	NW	OK	29.74	29.76	29.77	clear	10.00
11:55	89.1	57.9	35	8	NNW	OK	29.75	29.78	29.78	clear	10.00
10:55	84.9	55.0	36	9	WNW	OK	29.77	29.80	29.80	clear	10.00
9:55	81.0	59.0	47	8	NNW	OK	29.77	29.80	29.80	clear	10.00
8:55	77.0	57.2	51	6	NNW	OK	29.77	29.79	29.80	clear	10.00
7:55	71.1	57.9	63	6	NNW	OK	29.76	29.79	29.79	clear	10.00
6:55	64.9	55.0	70	6	N	OK	29.76	29.78	29.79	clear	7.00
5:55	66.0	48.9	54	5	NNW	OK	29.75	29.77	29.78	clear	10.00
4:55	68.0	51.8	56	6	NW	OK	29.73	29.76	29.76	clear	10.00
3:55	69.1	53.1	57	0		OK	29.73	29.76	29.76	clear	10.00
2:55	70.0	53.1	55	5	NNE	OK	29.73	29.76	29.76	clear	10.00
1:55	66.0	53.1	63	5	NNE	OK	29.74	29.77	29.77	clear	10.00
0:55	73.0	45.0	37	5	NE	OK	29.74	29.77	29.77	clear	10.00
23:55	75.9	45.0	33	0		OK	29.75	29.78	29.78	clear	10.00

Source: Meso West, University of Utah

Past Weather Conditions for KMOD

Observations prior to selected time: August 10, 2012 - 23:59 PDT

Tabular Listing: August 9, 2012 - 22:59 through August 10, 2012 - 23:59 PDT

Time(PDT)	Temperature	Dew Point	Relative Humidity	Wind Speed	Wind Direction	Quality check	Pressure	Sea level pressure	Altimeter	Weather conditions	Visibility
	° F	° F	%	mph			in	in	in		miles
23:53	82.0	46.0	28	3	N	OK	29.61	29.70	29.71	clear	10.00
22:53	82.9	46.9	29	8	NW	OK	29.60	29.70	29.70	clear	10.00
21:53	86.0	53.1	32	6	NNW	OK	29.60	29.69	29.70	clear	10.00
20:53	90.0	53.1	29	8	NNW	OK	29.58	29.68	29.68	clear	10.00
19:53	95.0	51.1	23	8	NW	OK	29.57	29.67	29.67	clear	10.00
18:53	100.0	46.0	16	10	NW	OK	29.56	29.66	29.66	clear	10.00
17:53	102.0	48.9	17	12	NW	OK	29.57	29.67	29.67	clear	10.00
16:53	102.0	46.9	16	13	NNW	OK	29.58	29.68	29.68	clear	10.00
15:53	102.9	43.0	13	12	NNW	OK	29.60	29.70	29.70	clear	10.00
14:53	100.0	50.0	19	10	N	OK	29.62	29.72	29.72	clear	10.00
13:53	97.0	53.1	23	9	NW	OK	29.65	29.75	29.75	clear	10.00
12:53	93.9	55.0	27	5	NW	OK	29.67	29.76	29.77	clear	10.00
11:53	90.0	55.0	31	6		OK	29.68	29.78	29.78	clear	10.00
10:53	86.0	51.1	30	7	NW	OK	29.69	29.79	29.79	clear	10.00
9:53	82.9	50.0	32	6	NNW	OK	29.70	29.79	29.80	clear	10.00
8:53	80.1	52.0	38	8	NNW	OK	29.70	29.79	29.80	clear	10.00
7:53	75.9	51.1	42	8	NNW	OK	29.69	29.78	29.79	clear	10.00
6:53	71.1	52.0	51	5	NW	OK	29.68	29.78	29.78	clear	10.00
5:53	71.1	51.1	49	6	NW	OK	29.67	29.77	29.77	clear	10.00
4:53	71.1	53.1	53	5	W	OK	29.66	29.76	29.76	clear	10.00
3:53	70.0	53.1	55	0		OK	29.66	29.75	29.76	clear	10.00
2:53	73.0	54.0	51	0		OK	29.66	29.76	29.76	clear	10.00
1:53	79.0	48.0	34	0		OK	29.66	29.76	29.76	clear	10.00
0:53	79.0	45.0	30	3	N	OK	29.68	29.78	29.78	clear	10.00
23:53	81.0	48.9	33	3	NNE	OK	29.68	29.78	29.78	clear	10.00

Source: Meso West, University of Utah

Past Weather Conditions for KMCE

Observations prior to selected time: August 10, 2010 - 23:59 PDT

Tabular Listing: August 9, 2010 - 22:59 through August 10, 2010 - 23:59 PDT

Time(PDT)	Temperature	Dew Point	Relative Humidity	Wind Speed	Wind Gust	Wind Direction	Quality check	Pressure	Sea level pressure	Altimeter	Weather conditions	Visibility
	° F	° F	%	mph	mph			in	in	in		miles
23:53	63.0	54.0	72	8		W	OK	29.67	29.83	29.84	clear	10.00
22:53	66.0	53.1	63	8		W	OK	29.66	29.83	29.83	clear	10.00
21:53	69.1	53.1	57	7		W	OK	29.66	29.82	29.83	clear	10.00
20:53	72.0	55.0	55				OK	29.65	29.81	29.82	clear	10.00
19:53	81.0	55.0	41	7		NW	OK	29.63	29.79	29.80	clear	10.00
18:53	86.0	54.0	34	9		NNW	OK	29.62	29.78	29.79	clear	10.00
17:53	89.1	55.0	32	14	25	NNW	OK	29.62	29.79	29.79	clear	10.00
16:53	90.0	53.1	29	9		NW	OK	29.62	29.79	29.79	clear	10.00
15:53	90.0	51.1	27	9		NW	OK	29.63	29.79	29.80	clear	10.00
14:53	89.1	53.1	29	8		NW	OK	29.64	29.80	29.81	clear	10.00
13:53	88.0	57.0	35	6			OK	29.65	29.81	29.82	clear	10.00
12:53	84.9	54.0	35	7		WNW	OK	29.66	29.82	29.83	clear	10.00
11:53	81.0	55.0	41	7		WNW	OK	29.67	29.83	29.84	clear	10.00
10:53	78.1	55.9	47	7		NW	OK	29.68	29.85	29.85	clear	10.00
9:53	73.9	55.9	53	6		NW	OK	29.68	29.85	29.85	clear	10.00
8:53	69.1	55.0	61	3			OK	29.67	29.84	29.84	clear	10.00
7:53	64.9	55.0	70	7		NNW	OK	29.66	29.83	29.83	clear	10.00
6:53	59.0	55.0	87	0			OK	29.65	29.82	29.82	clear	10.00
5:53	61.0	55.0	81	3		NW	OK	29.64	29.80	29.81	clear	10.00
4:53	62.1	55.0	78	5		NW	OK	29.63	29.79	29.80	clear	10.00
3:53	63.0	55.0	75	9		NW	OK	29.62	29.79	29.79	clear	10.00
2:53	66.0	55.0	68	7		WNW	OK	29.63	29.79	29.80	clear	10.00
1:53	64.0	57.0	78	7		NW	OK	29.63	29.80	29.80	clear	10.00
0:53	68.0	57.0	68	8		NW	OK	29.65	29.81	29.82	clear	10.00
23:53	70.0	57.9	66	7		NNW	OK	29.65	29.81	29.82	clear	10.00

Source: Meso West, University of Utah

Past Weather Conditions for KMAE Madera Municipal Airport

Observations prior to selected time: August 10, 2012 - 23:59 PDT

Tabular Listing: August 9, 2012 - 22:59 through August 10, 2012 - 23:59 PDT

Time(PDT)	Temperature	Dew Point	Relative Humidity	Wind Speed	Wind Direction	Quality check	Pressure	Sea level pressure	Altimeter	Weather conditions	Visibility
	° F	° F	%	mph			in	in	in		miles
23:53	75.9	61.0	60			OK	29.44	29.70	29.71	clear	10.00
22:53	77.0	59.0	54			OK	29.44	29.70	29.71	clear	10.00
21:53	79.0	57.0	47			OK	29.43	29.69	29.70	clear	10.00
20:53	84.0	57.0	40			OK	29.42	29.68	29.69	clear	10.00
19:53	90.0	57.0	33	7	WNW	OK	29.41	29.67	29.68	clear	10.00
18:53	98.1	57.9	27	6	WNW	OK	29.40	29.66	29.67	clear	10.00
17:53	102.0	57.0	23	6	WNW	OK	29.40	29.66	29.67	clear	10.00
16:53	104.0	48.9	16	8	WNW	OK	29.42	29.67	29.69	clear	10.00
15:53	104.0	48.0	16	9	WNW	OK	29.43	29.69	29.70	clear	10.00
14:53	102.9	46.0	15	8	WNW	OK	29.45	29.71	29.72	clear	10.00
13:53	100.9	46.9	16	9	WNW	OK	29.47	29.73	29.74	clear	10.00
12:53	100.0	50.0	19	8	WNW	OK	29.49	29.75	29.76	clear	10.00
11:53	96.1	54.0	24	6	W	OK	29.51	29.77	29.78	clear	10.00
10:53	91.0	55.9	31	6	WNW	OK	29.53	29.79	29.80	clear	10.00
9:53	87.1	55.0	34	5	WSW	OK	29.53	29.79	29.80	clear	10.00
8:53	81.0	60.1	49	3	SW	OK	29.53	29.79	29.80	clear	10.00
7:53	75.9	60.1	58	3	WSW	OK	29.52	29.78	29.79	clear	10.00
6:53	68.0	60.1	76	0		OK	29.52	29.78	29.79	clear	10.00
5:53	66.9	59.0	76	0		OK	29.51	29.77	29.78	clear	10.00
4:53	68.0	61.0	78	0		OK	29.50	29.76	29.77	clear	10.00
3:53	70.0	61.0	73	3	N	OK	29.51	29.77	29.78	clear	10.00
2:53	72.0	61.0	68	0		OK	29.51	29.77	29.78	clear	10.00
1:53	71.1	60.1	68	6	W	OK	29.51	29.77	29.78	clear	10.00
0:53	73.0	62.1	69	7	W	OK	29.52	29.78	29.79	clear	10.00
23:53	75.9	62.1	62	8	WNW	OK	29.52	29.78	29.79	clear	10.00

Source: Meso West, University of Utah

Past Weather Conditions for CQ035 Fresno-Sky Park (CARB)

Observations prior to selected time: August 10, 2012 - 23:59 PDT

Tabular Listing: August 9, 2012 - 22:59 through August 10, 2012 - 23:59 PDT

Time(PDT)	Temperature ° F	Wind Speed mph	Wind Direction	Quality check
23:00	86.4	2	WNW	OK
22:00	88.5	1	NW	OK
21:00	93.0	2	W	OK
20:00	97.9	2	WNW	OK
19:00	102.2	2	WNW	OK
18:00	103.8	3	WNW	OK
17:00	103.8	3	WNW	OK
16:00	103.8	3	NW	OK
15:00	102.2	3	NW	OK
14:00	100.0	2	NW	OK
13:00	97.3	2	NW	OK
12:00	95.2	1	N	OK
11:00	92.8	2	S	OK
10:00	88.3	2	SSE	OK
9:00	81.3	0		OK
8:00	73.9	1	NNE	OK
7:00	69.6	2	N	OK
6:00	70.0	2	N	OK
5:00	71.2	1	NNE	OK
4:00	73.0	0		OK
3:00	74.3	0		OK
2:00	75.7	1	N	OK
1:00	79.3	1	NW	OK
0:00	82.8	1	WNW	OK
23:00	85.8	3	W	OK

Source: Meso West, University of Utah

Past Weather Conditions for CQ036 Clovis (CARB)

Observations prior to selected time: August 10, 2012 - 23:59 PDT

Tabular Listing: August 9, 2012 - 22:59 through August 10, 2012 - 23:59 PDT

Time(PDT)	Temperature	Dew Point	Relative Humidity	Wind Speed	Wind Direction	Quality check	Pressure	Sea Level Pressure	Altimeter
	° F	° F	%	mph			in	in	in
23:00	90.0	50.4	26	4	WNW	OK	29.29	29.57	29.59
22:00	92.5	50.4	24	5	NW	OK	29.29	29.57	29.59
21:00	95.4	49.2	21	6	WNW	OK	29.29	29.57	29.59
20:00	100.4	44.3	15	6	WNW	OK	29.29	29.57	29.59
19:00	103.5	44.9	14	8	WNW	OK	29.29	29.57	29.59
18:00	104.7	43.9	13	8	WNW	OK	29.29	29.57	29.59
17:00	105.1	46.2	14	7	WNW	OK	29.29	29.57	29.59
16:00	104.5	52.5	18	7	WNW	OK	29.29	29.57	29.59
15:00	103.5	51.6	18	6	W	OK	29.33	29.61	29.63
14:00	102.2	49.1	17	3	WNW	OK	29.33	29.61	29.63
13:00	99.0	50.8	20	3	WSW	OK	29.37	29.65	29.67
12:00	95.7	53.1	24	5	SSE	OK	29.41	29.69	29.71
11:00	92.5	55.5	29	6	SSE	OK	29.41	29.69	29.71
10:00	89.6	56.6	33	5	SE	OK	29.41	29.69	29.71
9:00	85.3	58.2	40	5	SE	OK	29.41	29.69	29.71
8:00	79.9	56.6	45	2	ESE	OK	29.41	29.70	29.71
7:00	76.3	55.7	49	2	ENE	OK	29.41	29.70	29.71
6:00	76.1	57.7	53	2	ENE	OK	29.37	29.66	29.67
5:00	76.8	58.9	54	1	NE	OK	29.37	29.66	29.67
4:00	78.3	56.9	48	1	SE	OK	29.37	29.66	29.67
3:00	79.5	56.3	45	0		OK	29.37	29.66	29.67
2:00	81.5	54.1	39	2	WNW	OK	29.41	29.70	29.71
1:00	84.2	53.5	35	2	NNW	OK	29.41	29.69	29.71
0:00	86.9	51.7	30	5	NW	OK	29.41	29.69	29.71
23:00	88.9	50.5	27	5	WNW	OK	29.41	29.69	29.71

Source: Meso West, University of Utah

Past Weather Conditions for CQ227 Fresno-Garland (CARB)

Observations prior to selected time: August 10, 2012 - 23:59 PDT

Tabular Listing: August 9, 2012 - 22:59 through August 10, 2012 - 23:59 PDT

Time(PDT)	Temperature	Dew Point	Relative Humidity	Wind Speed	Wind Direction	Quality check	Pressure	Sea Level Pressure	Altimeter
	° F	° F	%	mph			in	in	in
23:00	87.8	45.7	23	4	WNW	OK	29.29	29.62	29.64
22:00	91.0	42.7	19	5	NW	OK	29.29	29.62	29.64
21:00	94.1	45.6	19	4	WNW	OK	29.29	29.62	29.64
20:00	99.1	45.8	16	5	NW	OK	29.29	29.61	29.64
19:00	102.9	42.5	13	6	NW	OK	29.29	29.61	29.64
18:00	104.4	42.6	12	7	WNW	OK	29.29	29.61	29.64
17:00	105.3	42.7	12	7	WNW	OK	29.33	29.65	29.68
16:00	105.4	46.3	14	6	W	OK	29.33	29.65	29.68
15:00	103.6	50.2	17	6	W	OK	29.37	29.69	29.72
14:00	104.0	50.0	17	4	SW	OK	29.37	29.69	29.72
13:00	101.1	50.3	18	3	SSW	OK	29.41	29.73	29.76
12:00	97.5	52.9	23	3	S	OK	29.41	29.73	29.76
11:00	93.9	56.0	28	4	SE	OK	29.41	29.74	29.76
10:00	89.4	56.5	33	4	SE	OK	29.41	29.74	29.76
9:00	83.7	56.7	40	4	SE	OK	29.41	29.74	29.76
8:00	78.6	58.3	50	1	SSE	OK	29.41	29.74	29.76
7:00	71.6	56.0	58	1	E	OK	29.37	29.71	29.72
6:00	71.2	55.7	58	1	ESE	OK	29.37	29.71	29.72
5:00	71.6	55.8	58	1	SSW	OK	29.37	29.71	29.72
4:00	73.2	55.4	54	1	SSW	OK	29.37	29.71	29.72
3:00	75.6	53.8	47	2	SSW	OK	29.41	29.75	29.76
2:00	78.1	51.2	39	2	S	OK	29.41	29.75	29.76
1:00	81.9	48.2	31	3	W	OK	29.41	29.74	29.76
0:00	84.7	46.9	27	4	NW	OK	29.41	29.74	29.76
23:00	86.7	48.2	26	4	WNW	OK	29.37	29.70	29.72

Source: Meso West, University of Utah

Past Weather Conditions for HSQC1 High Sierra (Near Bear Fire)

Observations prior to selected time: August 08, 2012 - 23:59 PDT

Tabular Listing: August 7, 2012 - 22:59 through August 08, 2012 - 23:59 PDT

Time(PDT)	Temperature ° F	Dew Point ° F	Relative Humidity %	Wind Speed mph	Wind Gust mph	Wind Direction	Quality check
23:51	61.0	42.2	50	3	4	SW	OK
22:51	63.0	43.0	48	3	4	SW	OK
21:51	64.0	42.8	46	3	4	SW	OK
20:51	66.0	42.9	43	3	4	SW	OK
19:51	72.0	42.1	34	2	8	SW	OK
18:51	76.0	43.2	31	4	11	NNW	OK
17:51	79.0	43.1	28	5	11	NW	OK
16:51	85.0	45.2	25	6	15	N	OK
15:51	86.0	41.5	21	6	15	SSW	OK
14:51	88.0	41.9	20	6	12	WSW	OK
13:51	87.0	41.0	20	3	12	SSW	OK
12:51	87.0	36.9	17	7	12	NNE	OK
11:51	86.0	38.9	19	5	10	ESE	OK
10:51	85.0	39.4	20	6	16	SE	OK
9:51	80.0	43.0	27	7	14	ESE	OK
8:51	76.0	46.4	35	3	5	E	OK
7:51	69.0	49.0	49	2	4	NNE	OK
6:51	57.0	41.0	55	3	4	SW	OK
5:51	57.0	40.5	54	3	4	SW	OK
4:51	57.0	40.5	54	3	4	SW	OK
3:51	58.0	41.0	53	3	4	SW	OK
2:51	58.0	40.5	52	3	4	SW	OK
1:51	59.0	40.4	50	3	4	SW	OK
0:51	60.0	40.8	49	3	4	SW	OK
23:51	60.0	38.0	44	3	4	SW	OK

Source: Meso West, University of Utah

Past Weather Conditions for HSQC1 High Sierra (near Bear Fire)

Observations prior to selected time: August 09, 2012 - 23:59 PDT

Tabular Listing: August 8, 2012 - 22:59 through August 09, 2012 - 23:59 PDT

Time(PDT)	Temperature	Dew Point	Relative Humidity	Wind Speed	Wind Gust	Wind Direction	Quality check	Solar Radiation
	° F	° F	%	mph	mph			W/m*m
23:51	63.0	39.5	42	3	4	SW	OK	0.0
22:51	64.0	39.8	41	3	4	SW	OK	0.0
21:51	65.0	38.8	38	3	5	SW	OK	0.0
20:51	68.0	42.8	40	3	5	SW	OK	0.0
19:51	72.0	40.5	32	1	7	WSW	OK	15.0
18:51	78.0	38.3	24	4	9	ESE	OK	131.0
17:51	81.0	37.4	21	4	13	SE	OK	391.0
16:51	85.0	39.4	20	5	18	SE	OK	700.0
15:51	86.0	40.2	20	8	15	SSE	OK	891.0
14:51	89.0	41.4	19	4	13	WSW	OK	831.0
13:51	85.0	36.7	18	6	17	SE	OK	821.0
12:51	89.0	37.0	16	6	17	ENE	OK	1122.0
11:51	88.0	36.2	16	6	16	SE	OK	1050.0
10:51	86.0	38.9	19	7	13	SE	OK	905.0
9:51	82.0	42.7	25	3	8	N	OK	662.0
8:51	78.0	45.7	32	3	6	NE	OK	498.0
7:51	71.0	49.2	46	2	5	NNW	OK	262.0
6:51	60.0	43.3	54	3	4	SW	OK	17.0
5:51	58.0	41.9	55	3	4	SW	OK	0.0
4:51	59.0	41.9	53	3	5	SW	OK	0.0
3:51	59.0	40.4	50	3	4	SW	OK	0.0
2:51	59.0	40.4	50	3	4	SW	OK	0.0
1:51	60.0	42.3	52	3	4	SW	OK	0.0
0:51	60.0	41.8	51	3	4	SW	OK	0.0
23:51	61.0	42.2	50	3	4	SW	OK	0.0

Source: Meso West, University of Utah

Past Weather Conditions for KFAT (Fresno Air Terminal)

Observations prior to selected time: August 10, 2012 - 23:59 PDT

Tabular Listing: August 9, 2012 - 22:59 through August 10, 2012 - 23:59 PDT

Time(PDT)	Temperature	Dew Point	Relative Humidity	Wind Speed	Wind Gust	Wind Direction	Quality check	Pressure	Sea level pressure	Altimeter	Weather conditions	Visibility	Ceiling
	° F	° F	%	mph	mph			in	in	in		miles	feet
23:53	87.1	54.0	32	7		W	OK	29.36	29.69	29.71	partly cloudy	10.00	
22:53	90.0	52.0	28	10		WNW	OK	29.36	29.69	29.71	partly cloudy	10.00	
21:53	93.9	48.9	22	7		NW	OK	29.35	29.68	29.70	partly cloudy	10.00	
20:53	95.0	51.8	23	8		WNW	OK	29.34	29.67	29.69	partly cloudy	10.00	
19:53	100.0	46.9	17	10		WNW	OK	29.33	29.66	29.68	partly cloudy	10.00	
18:53	105.1	48.0	15	12		NW	OK	29.32	29.65	29.67	partly cloudy	10.00	
17:53	108.0	46.0	13	10		WNW	OK	29.32	29.65	29.67	partly cloudy	10.00	
16:53	109.0	45.0	12	12		NW	OK	29.33	29.66	29.68	partly cloudy	10.00	
15:53	108.0	46.9	13	12	16	WNW	OK	29.34	29.68	29.69	partly cloudy	10.00	
14:53	107.1	52.0	16	10		NW	OK	29.36	29.70	29.71	mostly clear	10.00	
13:53	106.0	52.0	17	6		W	OK	29.39	29.72	29.74	mostly cloudy	10.00	20000
12:53	102.0	54.0	20	0			OK	29.41	29.74	29.76	mostly cloudy	10.00	20000
11:53	98.1	55.0	24	3		NE	OK	29.43	29.76	29.78	clear	10.00	
10:53	95.0	55.4	27	8		SE	OK	29.45	29.78	29.80	clear	10.00	
9:53	91.0	57.0	32	8		SE	OK	29.45	29.78	29.80	clear	10.00	
8:53	88.0	59.0	38	8		E	OK	29.45	29.79	29.80	clear	9.00	
7:53	84.0	59.0	43	8		SE	OK	29.45	29.78	29.80	clear	9.00	
6:53	78.1	55.9	47	0			OK	29.44	29.78	29.79	mostly clear	10.00	
5:53	77.0	57.2	51	3		E	OK	29.43	29.77	29.78	mostly clear	10.00	
4:53	78.1	57.0	48	0			OK	29.42	29.75	29.77	partly cloudy	10.00	
3:53	78.1	57.0	48	0			OK	29.43	29.76	29.78	partly cloudy	10.00	
2:53	81.0	57.0	44	0			OK	29.44	29.77	29.79	partly cloudy	10.00	
1:53	82.9	55.0	38	3		WNW	OK	29.44	29.77	29.79	clear	10.00	
0:53	84.9	54.0	35	3		N	OK	29.44	29.78	29.79	clear	10.00	
23:53	87.1	54.0	32	3		NW	OK	29.44	29.77	29.79	clear	10.00	

Source: Meso West, University of Utah

Past Weather Conditions for CQ075 Drummond (CARB)

Observations prior to selected time: August 10, 2012 - 23:59 PDT

Tabular Listing: August 9, 2012 - 22:59 through August 10, 2012 - 23:59 PDT

Time(PDT)	Temperature	Wind Speed	Wind Direction	Quality check	Pressure	Altimeter
	° F	mph			in	in
23:00	91.2	3	WNW	OK	29.41	29.83
22:00	93.9	4	NW	OK	29.41	29.83
21:00	96.6	3	WNW	OK	29.37	29.79
20:00	101.3	4	NW	OK	29.37	29.79
19:00	104.2	7	NNW	OK	29.37	29.79
18:00	105.3	6	NW	OK	29.37	29.79
17:00	105.6	6	NW	OK	29.37	29.79
16:00	104.5	5	WNW	OK	29.41	29.83
15:00	102.7	5	WNW	OK	29.41	29.83
14:00	100.4	5	WSW	OK	29.45	29.87
13:00	96.8	2	W	OK	29.45	29.87
12:00	92.8	1	S	OK	29.49	29.91
11:00	88.3	3	ESE	OK	29.49	29.91
10:00	83.3	3	ESE	OK	29.49	29.91
9:00	79.3	4	ESE	OK	29.49	29.91
8:00	77.2	2	E	OK	29.49	29.91
7:00	74.7	1	ENE	OK	29.49	29.91
6:00	74.5	3	E	OK	29.49	29.91
5:00	75.7	1	NE	OK	29.49	29.91
4:00	75.9	2	E	OK	29.49	29.91
3:00	80.6	1	E	OK	29.49	29.91
2:00	83.5	2	NW	OK	29.49	29.91
1:00	86.0	2	WNW	OK	29.49	29.91
0:00	88.5	3	NW	OK	29.49	29.91
23:00	90.9	5	NW	OK	29.49	29.91

Source: Meso West, University of Utah

Past Weather Conditions for CQ034 Parlier (CARB)

Observations prior to selected time: August 10, 2012 - 23:59 PDT

Tabular Listing: August 9, 2012 - 22:59 through August 10, 2012 - 23:59 PDT

Time(PDT)	Temperature	Dew Point	Relative Humidity	Wind Speed	Wind Direction	Quality check	Pressure	Sea Level Pressure	Altimeter
	° F	° F	%	mph			in	in	in
23:00	84.9	59.2	42	3	WSW	OK	29.33	29.59	29.60
22:00	87.8	58.8	38	3	NNW	OK	29.33	29.59	29.60
21:00	92.3	56.3	30	6	WNW	OK	29.33	29.59	29.60
20:00	98.6	54.3	23	5	WNW	OK	29.29	29.54	29.56
19:00	102.0	54.5	21	6	NW	OK	29.29	29.54	29.56
18:00	102.4	57.7	23	7	W	OK	29.29	29.54	29.56
17:00	102.7	57.9	23	6	W	OK	29.33	29.58	29.60
16:00	102.0	56.5	22	5	WNW	OK	29.33	29.58	29.60
15:00	99.5	57.4	25	5	SW	OK	29.37	29.62	29.64
14:00	96.3	59.8	30	5	SSW	OK	29.37	29.62	29.64
13:00	92.1	60.3	35	5	SSW	OK	29.41	29.66	29.68
12:00	90.0	60.1	37	5	S	OK	29.41	29.67	29.68
11:00	87.1	60.4	41	6	SSE	OK	29.45	29.71	29.72
10:00	82.9	62.4	50	6	SSE	OK	29.45	29.71	29.72
9:00	77.9	64.4	63	6	SE	OK	29.45	29.71	29.72
8:00	73.6	63.3	70	3	ESE	OK	29.45	29.71	29.72
7:00	70.7	60.4	70	3	ENE	OK	29.45	29.71	29.72
6:00	72.1	60.6	67	3	ENE	OK	29.41	29.67	29.68
5:00	73.0	60.5	65	1	E	OK	29.41	29.67	29.68
4:00	72.9	60.8	66	1	NE	OK	29.41	29.67	29.68
3:00	73.9	61.5	65	2	ESE	OK	29.41	29.67	29.68
2:00	74.7	60.6	62	2	SE	OK	29.45	29.71	29.72
1:00	79.0	59.1	51	2	S	OK	29.45	29.71	29.72
0:00	80.2	59.6	50	1	SSW	OK	29.41	29.67	29.68
23:00	84.6	58.7	42	1	WNW	OK	29.41	29.67	29.68

Source: Meso West, University of Utah

Past Weather Conditions for CQ064 Visalia Airport (CARB)

Observations prior to selected time: August 10, 2012 - 23:59 PDT

Tabular Listing: August 9, 2012 - 22:59 through August 10, 2012 - 23:59 PDT

Time(PDT)	Temperature	Dew Point	Relative Humidity	Wind Speed	Wind Direction	Quality check	Pressure	Sea Level Pressure	Altimeter	Solar Radiation
	° F	° F	%	mph			in	in	in	W/m*m
23:00	86.0	62.2	45	2	NW	OK	29.45	29.75	29.76	0.0
22:00	87.1	64.2	47	1	WSW	OK	29.45	29.75	29.76	0.0
21:00	90.3	63.8	42	2	WNW	OK	29.41	29.70	29.72	0.0
20:00	96.6	60.0	30	3	WNW	OK	29.45	29.74	29.76	30.0
19:00	101.5	57.2	23	4	WNW	OK	29.45	29.74	29.76	210.0
18:00	102.4	61.1	26	3	WNW	OK	29.45	29.74	29.76	530.0
17:00	101.3	59.0	25	4	WNW	OK	29.49	29.78	29.80	790.0
16:00	100.9	59.6	26	3	WNW	OK	29.49	29.78	29.80	1000.0
15:00	99.5	59.1	27	2	W	OK	29.53	29.82	29.84	1150.0
14:00	97.5	57.5	27	2	WNW	OK	29.53	29.82	29.84	1210.0
13:00	93.9	59.3	32	2	W	OK	29.57	29.86	29.88	1200.0
12:00	90.5	59.2	35	2	SSW	OK	29.57	29.86	29.88	1140.0
11:00	85.3	58.9	41	4	S	OK	29.53	29.83	29.84	1000.0
10:00	81.1	59.4	48	5	S	OK	29.53	29.83	29.84	810.0
9:00	77.0	59.0	54	3	SSE	OK	29.53	29.83	29.84	580.0
8:00	72.5	64.5	76	4	SSE	OK	29.49	29.79	29.80	310.0
7:00	71.4	64.3	78	4	S	OK	29.45	29.75	29.76	50.0
6:00	71.8	64.1	77	3	S	OK	29.45	29.75	29.76	0.0
5:00	73.2	63.1	71	4	S	OK	29.45	29.75	29.76	0.0
4:00	74.3	63.7	70	2	ESE	OK	29.45	29.75	29.76	0.0
3:00	75.6	63.5	66	0		OK	29.49	29.79	29.80	0.0
2:00	76.6	63.2	63	1	SSW	OK	29.49	29.79	29.80	0.0
1:00	79.7	62.0	55	2	SSW	OK	29.49	29.79	29.80	0.0
0:00	82.8	60.8	48	2	SW	OK	29.49	29.79	29.80	0.0
23:00	86.0	59.2	41	0		OK	29.53	29.83	29.84	0.0

Source: Meso West, University of Utah

Past Weather Conditions for CQ198 Porterville (CARB)

Observations prior to selected time: August 10, 2012 - 23:59 PDT

Tabular Listing: August 9, 2012 - 22:59 through August 10, 2012 - 23:59 PDT

Time(PDT)	Temperature	Wind Speed	Wind Direction	Quality check	Pressure	Altimeter
	° F	mph			in	in
23:00		5	SE	OK		
17:00	102.0	8	NW	OK	29.25	29.75
16:00	101.5	9	WNW	OK	29.25	29.75
15:00	99.9	9	WNW	OK	29.29	29.79
14:00	97.9	9	WNW	OK	29.29	29.79
13:00	95.7	8	W	OK	29.33	29.83
12:00	93.6	6	WSW	OK	29.33	29.83
11:00	90.1	5	SW	OK	29.37	29.87
10:00	86.9	4	SW	OK	29.37	29.87
9:00	83.7	4	SSW	OK	29.37	29.87
8:00	80.4	4	S	OK	29.37	29.87
7:00	77.7	4	SSE	OK	29.37	29.87
6:00	77.7	5	SE	OK	29.33	29.83
5:00	78.4	4	SE	OK	29.33	29.83
4:00	77.9	4	SSE	OK	29.33	29.83
3:00	79.7	2	ESE	OK	29.33	29.83
2:00	81.1	3	ESE	OK	29.37	29.87
1:00	82.2	2	ESE	OK	29.37	29.87
0:00	84.0	5	ESE	OK	29.37	29.87
23:00	86.2	4	SE	OK	29.37	29.87

Source: Meso West, University of Utah

Past Weather Conditions for CI182 Delano (CIMIS)

Observations prior to selected time: August 10, 2012 - 23:59 PDT

Tabular Listing: August 9, 2012 - 22:59 through August 10, 2012 - 23:59 PDT

Time(PDT)	Temperature ° F	Dew Point ° F	Relative Humidity %	Wind Speed mph	Wind Direction	Quality check	Solar Radiation W/m*m
23:00	83.9	67.5	58	2	ESE	N/A	0.0
22:00	85.6	66.5	53	1	NNE	N/A	0.0
21:00	88.5	67.4	50	1	W	N/A	0.0
20:00	98.1	63.1	32	1	SW	N/A	25.0
19:00	103.0	60.3	25	3	NNW	N/A	154.3
18:00	105.0	52.8	18	5	N	N/A	326.9
17:00	106.3	50.7	16	6	N	N/A	486.3
16:00	106.3	48.9	15	6	N	N/A	622.4
15:00	105.6	46.6	14	6	NNW	N/A	721.6
14:00	102.6	49.4	17	6	NW	N/A	775.9
13:00	100.1	50.4	19	4	NW	N/A	727.6
12:00	97.8	49.9	20	4	N	N/A	674.2
11:00	95.2	51.5	23	4	N	N/A	582.6
10:00	88.7	54.1	31	3	WNW	N/A	498.2
9:00	85.6	52.3	32	2	W	N/A	352.3
8:00	77.1	60.2	56	3	SE	N/A	183.2
7:00	72.5	59.6	64	3	SSW	N/A	35.2
6:00	71.7	61.0	69	3	SE	N/A	0.0
5:00	71.5	60.8	69	2	S	N/A	0.0
4:00	73.0	61.4	67	3	SE	N/A	0.0
3:00	74.7	61.7	64	3	SE	N/A	0.0
2:00	76.5	63.4	64	2	SE	N/A	0.0
1:00	79.2	63.6	59	3	SE	N/A	0.0
0:00	80.6	65.4	60	3	SE	N/A	0.0
23:00	83.0	66.2	57	2	SE	N/A	0.0

Source: Meso West, University of Utah

Weather Conditions for CI138 Famoso (CIMIS)

Observations prior to selected time: August 10, 2012 - 23:59 PDT

Tabular Listing: August 9, 2012 - 22:59 through August 10, 2012 - 23:59 PDT

Time(PDT)	Temperature	Dew Point	Relative Humidity	Wind Speed	Wind Direction
	° F	° F	%	mph	
23:00	82.1	59.2	46	3	E
22:00	84.3	60.6	45	2	ENE
21:00	87.2	59.2	39	2	NW
20:00	93.8	56.7	29	3	NNE
19:00	97.9	54.9	24	5	NNE
18:00	99.6	53.9	22	6	NNE
17:00	100.9	49.5	18	7	NNW
16:00	100.4	46.0	16	8	NW
15:00	98.8	47.9	18	7	NNW
14:00	96.7	47.6	19	7	NNW
13:00	94.9	50.1	22	6	NW
12:00	92.8	52.8	26	6	W
11:00	90.2	53.6	29	4	W
10:00	88.3	55.5	33	2	NW
9:00	83.7	55.4	38	2	SW
8:00	77.0	54.0	45	3	ESE
7:00	74.0	50.7	44	3	SSE
6:00	73.3	51.8	47	4	ESE
5:00	74.2	50.2	43	3	ESE
4:00	74.3	52.2	46	3	ESE
3:00	75.6	50.9	42	3	ESE
2:00	76.4	51.6	42	4	ESE
1:00	77.1	55.3	47	3	ESE
0:00	78.2	57.5	49	2	ENE
23:00	80.1	59.8	50	3	E

Source: Meso West, University of Utah

Past Weather Conditions for KBFL (Meadows Airport)

Observations prior to selected time: August 10, 2012 - 23:59 PDT

Tabular Listing: August 9, 2012 - 22:59 through August 10, 2012 - 23:59 PDT

Time(PDT)	Temperature	Dew Point	Relative Humidity	Wind Speed	Wind Direction	Quality check	Pressure	Sea level pressure	Altimeter	Weather conditions	Visibility
	° F	° F	%	mph			in	in	in		miles
23:54	93.0	37.9	15	3	ENE	OK	29.19	29.70	29.73	clear	10.00
22:54	93.9	41.0	16	6	ESE	OK	29.19	29.70	29.73	clear	10.00
21:54	91.9	44.1	19	5	N	OK	29.18	29.69	29.72	clear	10.00
20:54	95.0	42.8	17	6	N	OK	29.16	29.67	29.70	clear	10.00
19:54	97.0	52.0	22	5	NW	OK	29.15	29.66	29.69	clear	10.00
18:54	102.9	48.9	17	9	NW	OK	29.14	29.65	29.68	clear	10.00
17:54	106.0	46.9	14	10	WNW	OK	29.13	29.65	29.67	mostly clear	10.00
16:54	107.1	46.0	13	9	WNW	OK	29.14	29.65	29.68	clear	10.00
15:54	106.0	46.9	14	12	NW	OK	29.15	29.67	29.69	clear	10.00
14:54	106.0	48.0	15	10	WNW	OK	29.17	29.68	29.71	clear	10.00
13:54	102.9	48.9	17	10	NW	OK	29.19	29.71	29.73	clear	10.00
12:54	102.0	53.1	20	8	W	OK	29.22	29.73	29.76	clear	10.00
11:54	99.0	54.0	22	5	W	OK	29.24	29.75	29.78	clear	10.00
10:54	95.0	55.4	27	5	SSW	OK	29.26	29.77	29.80	clear	10.00
9:54	91.0	55.0	30	3		OK	29.27	29.78	29.81	clear	10.00
8:54	87.1	55.0	34	3	E	OK	29.27	29.78	29.81	clear	10.00
7:54	84.0	54.0	36	5	SE	OK	29.27	29.78	29.81	clear	10.00
6:54	82.9	53.1	36	5	SE	OK	29.26	29.78	29.80	clear	10.00
5:54	80.1	51.1	37	0		OK	29.26	29.77	29.80	clear	10.00
4:54	84.0	54.0	36	3	ESE	OK	29.25	29.76	29.79	clear	10.00
3:54	84.9	52.0	32	3	ESE	OK	29.25	29.77	29.79	clear	10.00
2:54	84.0	50.0	31	3	E	OK	29.26	29.77	29.80	clear	10.00
1:54	82.9	48.0	30	3	E	OK	29.26	29.78	29.80	clear	10.00
0:54	84.9	46.9	27	0		OK	29.27	29.78	29.81	clear	10.00
23:54	88.0	50.0	27	0		OK	29.27	29.79	29.81	clear	10.00

Source: Meso West, University of Utah

Past Weather Conditions for CQ008 Edison (CARB)

Observations prior to selected time: August 10, 2012 - 23:59 PDT

Tabular Listing: August 9, 2012 - 22:59 through August 10, 2012 - 23:59 PDT

Time(PDT)	Temperature ° F	Wind Speed mph	Wind Direction	Quality check
23:00	86.0	6	E	OK
22:00	87.8	5	ENE	OK
21:00	91.4	3	E	OK
20:00	98.6	5	SW	OK
19:00	104.0	7	SW	OK
18:00	105.8	8	SW	OK
17:00	107.6	8	SW	OK
16:00	107.6	6	SW	OK
15:00	107.6	7	SW	OK
14:00	105.8	6	SW	OK
13:00	105.8	2	WSW	OK
12:00	102.2	2	WSW	OK
11:00	98.6	3	SW	OK
10:00	95.0	3	SSW	OK
9:00	91.4	3	SSW	OK
8:00	84.2	2	SE	OK
7:00	78.8	5	E	OK
6:00	80.6	6	E	OK
5:00	82.4	2	E	OK
4:00	84.2	7	E	OK
3:00	84.2	7	E	OK
2:00	84.2	7	E	OK
1:00	84.2	7	E	OK
0:00	84.2	6	E	OK
23:00	84.2	6	ENE	OK

Source: Meso West, University of Utah

Past Weather Conditions for DEMC1 Democrat (near Piute Complex)

Observations prior to selected time: August 09, 2012 - 23:59 PDT

Tabular Listing: August 8, 2012 - 22:59 through August 09, 2012 - 23:59 PDT

Time(PDT)	Temperature ° F	Dew Point ° F	Relative Humidity %	Wind Speed mph	Wind Gust mph	Wind Direction	Quality check	Solar Radiation W/m*m
23:25	81.0	41.8	25	0	5	SE	OK	0.0
22:25	81.0	40.8	24	0	5	SE	OK	0.0
21:25	82.0	41.6	24	0	5	ESE	OK	0.0
20:25	88.0	44.4	22	0	6	SSE	OK	4.0
19:25	96.0	40.8	15	0	12	SSW	OK	115.0
18:25	102.0	39.8	12	4	16	SW	OK	313.0
17:25	106.0	40.6	11	5	14	SW	OK	509.0
16:25	105.0	39.8	11	7	19	WSW	OK	680.0
15:25	107.0	41.3	11	8	19	WSW	OK	817.0
14:25	106.0	40.6	11	7	19	SW	OK	901.0
13:25	104.0	41.3	12	10	19	WSW	OK	919.0
12:25	103.0	42.6	13	8	13	W	OK	891.0
11:25	100.0	40.3	13	1	10	NNE	OK	801.0
10:25	98.0	44.1	16	0	6	ESE	OK	622.0
9:25	89.0	44.0	21	1	5	NNW	OK	111.0
8:25	83.0	43.5	25	0	0		OK	199.0
7:25	74.0	46.1	37	0	4	ESE	OK	59.0
6:25	69.0	43.7	40	0	4	ESE	OK	1.0
5:25	70.0	43.2	38	0	3	ESE	OK	0.0
4:25	69.0	42.3	38	0	3	ESE	OK	0.0
3:25	71.0	41.2	34	0	3	ESE	OK	0.0
2:25	72.0	41.3	33	0	3	SE	OK	0.0
1:25	76.0	42.3	30	0	3	SE	OK	0.0
0:25	77.0	42.3	29	0	4	SE	OK	0.0
23:25	79.0	43.1	28	0	6	SE	OK	0.0

Source: Meso West, University of Utah

Past Weather Conditions for DEMC1 Democrat (near Piute Complex)

Observations prior to selected time: August 10, 2012 - 23:59 PDT

Tabular Listing: August 9, 2012 - 22:59 through August 10, 2012 - 23:59 PDT

Time(PDT)	Temperature ° F	Dew Point ° F	Relative Humidity %	Wind Speed mph	Wind Gust mph	Wind Direction	Quality check	Solar Radiation W/m*m
23:25	82.0	40.5	23	0	5	SE	OK	0.0
22:25	85.0	43.0	23	0	5	SE	OK	0.0
21:25	86.0	43.9	23	0	5	SE	Caution	0.0
20:25	90.0	42.2	19	0	7	SSE	Caution	5.0
19:25	98.0	36.7	12	2	12	WSW	Caution	115.0
18:25	105.0	37.4	10	4	14	WSW	Caution	301.0
17:25	107.0	38.9	10	6	15	WSW	OK	495.0
16:25	108.0	42.1	11	7	14	SW	OK	673.0
15:25	109.0	42.8	11	5	18	WSW	OK	841.0
14:25	108.0	42.1	11	6	19	SW	OK	913.0
13:25	105.0	37.4	10	8	17	SW	OK	935.0
12:25	105.0	39.8	11	9	14	WSW	OK	890.0
11:25	102.0	39.8	12	5	10	W	OK	799.0
10:25	100.0	42.2	14	0	5	NW	OK	610.0
9:25	92.0	43.8	19	0	4	NW	OK	126.0
8:25	87.0	45.8	24	0	3	SE	OK	173.0
7:25	75.0	45.5	35	0	3	ESE	OK	58.0
6:25	71.0	42.7	36	0	3	SE	OK	1.0
5:25	72.0	42.1	34	0	0		OK	0.0
4:25	72.0	41.3	33	0	3	SE	OK	0.0
3:25	73.0	42.2	33	0	3	SE	OK	0.0
2:25	74.0	41.4	31	0	3	ESE	OK	0.0
1:25	78.0	42.2	28	0	4	SE	OK	0.0
0:25	78.0	41.3	27	0	4	SE	OK	0.0
23:25	81.0	41.8	25	0	5	SE	OK	0.0

Source: Meso West, University of Utah

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APPENDIX G: Climatology

G1. Climate Summaries

FRESNO WSO AP, CALIFORNIA (043257)

1981-2010 Monthly Climate Summary

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	55.3	61.7	67.8	74.9	84.1	92.3	98.2	97.0	90.5	79.4	63.2	55.2	76.9
Average Min. Temperature (F)	38.8	42.0	45.6	49.4	56.0	62.1	67.2	66.0	61.1	52.8	42.5	38.6	52.0
Average Total Precipitation (in.)	2.11	2.19	1.94	1.02	0.47	0.18	0.01	0.01	0.15	0.58	1.10	1.84	11.62

Source: Western Regional Climate Center

G2. Preliminary Climatological Data for August 2012

Fresno, CA August 2012

```
000
CXUS56 KHNX 011146
CF6FAT
PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

                                        STATION:   FRESNO CA
                                        MONTH:     AUGUST
                                        YEAR:      2012
                                        LATITUDE:   36 46 N
                                        LONGITUDE: 119 43 W
```

TEMPERATURE IN F:							:PCPN:	SNOW:	WIND				:SUNSHINE:		SKY		:PK WND	
1	2	3	4	5	6A	6B	7	8	9	10	11	12	13	14	15	16	17	18
									12Z	AVG	MX	2MIN						
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	DPTH	SPD	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR
1	106	70	88	5	0	23	0.00	0.0	0	5.7	15	310	M	M	2		18	300
2	105	69	87	4	0	22	0.00	0.0	0	4.6	12	300	M	M	2		18	10
3	102	71	87	4	0	22	0.00	0.0	0	4.9	13	290	M	M	7		17	350
4	99	72	86	3	0	21	0.00	0.0	0	6.9	16	310	M	M	6		21	310
5	99	64	82	-1	0	17	0.00	0.0	0	7.3	15	290	M	M	2		18	270
6	101	67	84	1	0	19	0.00	0.0	0	7.3	15	300	M	M	2		24	330
7	102	69	86	3	0	21	0.00	0.0	0	7.5	17	300	M	M	2		22	310
8	103	71	87	4	0	22	0.00	0.0	0	6.2	14	310	M	M	2		17	290
9	107	75	91	8	0	26	0.00	0.0	0	5.5	15	290	M	M	1		18	290
10	109	76	93	11	0	28	0.00	0.0	0	6.1	14	300	M	M	3		17	320
11	111	78	95	13	0	30	0.00	0.0	0	5.1	13	310	M	M	5		16	350

```
12 105  80  93  11   0  28 0.00  0.0    0  4.0 12 300   M    M   5        14 320
13 110  78  94  12   0  29 0.00  0.0    0  5.2 13 300   M    M   3        15 300
14 109  82  96  14   0  31 0.00  0.0    0  5.3 21  80   M    M   6        24  80
15 106  75  91   9   0  26 0.00  0.0    0  6.5 16 300   M    M   1        20 310
16 102  71  87   5   0  22 0.00  0.0    0  6.2 14 300   M    M   3        20 320
17 105  74  90   8   0  25 0.00  0.0    0  7.5 16 300   M    M   4 8      20 290
18 101  75  88   6   0  23    T  0.0    0  7.9 20 300   M    M   7        24 320
19 102  74  88   7   0  23 0.00  0.0    0  8.5 16 300   M    M   4         M  M
20 103  69  86   5   0  21 0.00  0.0    0  5.8 14 310   M    M   2        18 290
21 102  71  87   6   0  22 0.00  0.0    0  7.4 15 300   M    M   5        21 300
22 100  71  86   5   0  21 0.00  0.0    0  6.9 15 290   M    M   4        20 290
23 101  69  85   4   0  20 0.00  0.0    0  6.5 14 300   M    M   0        18 340
24 100  70  85   4   0  20 0.00  0.0    0  7.2 15 310   M    M   0        20 320
25  98  69  84   4   0  19 0.00  0.0    0  7.5 15 310   M    M   1         M  M
26  92  63  78  -2   0  13 0.00  0.0    0  7.7 16 310   M    M   0        21 320
27  94  60  77  -3   0  12 0.00  0.0    0  5.9 13 300   M    M   0        14 290
28  98  63  81   1   0  16 0.00  0.0    0  6.7 15 300   M    M   0         M 330
29  99  66  83   3   0  18 0.00  0.0    0  3.5  9 280   M    M   4        13 300
30 103  70  87   7   0  22 0.00  0.0    0  4.6 15 300   M    M   4        18 300
31  94  65  80   0   0  15 0.00  0.0    0  8.1 16 300   M    M   4 8      20 310
================================================================================
SM 3168 2197         0 677    T      0.0 196.0          M       91
================================================================================
AV102.2 70.9                                6.3 FASTST   M    M   3    MAX(MPH)
                                  MISC ---->  # 21  80                # 24  330
================================================================================
NOTES:
# LAST OF SEVERAL OCCURRENCES

COLUMN 17 PEAK WIND IN M.P.H.

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6) , PAGE 2

                                          STATION:  FRESNO CA
                                          MONTH:    AUGUST
                                          YEAR:     2012
                                          LATITUDE:   36 46 N
                                          LONGITUDE: 119 43 W

[TEMPERATURE DATA]      [PRECIPITATION DATA]       SYMBOLS USED IN COLUMN 16

AVERAGE MONTHLY: 86.5   TOTAL FOR MONTH:      T    1 = FOG OR MIST
DPTR FM NORMAL:   4.8   DPTR FM NORMAL:   -0.01    2 = FOG REDUCING VISIBILITY
HIGHEST:   111 ON 11    GRTST 24HR    T  ON 18-18      TO 1/4 MILE OR LESS
LOWEST:     60 ON 27                                3 = THUNDER
                        SNOW, ICE PELLETS, HAIL     4 = ICE PELLETS
                        TOTAL MONTH:   0.0 INCH     5 = HAIL
                        GRTST 24HR     0.0          6 = FREEZING RAIN OR DRIZZLE
                        GRTST DEPTH:   0            7 = DUSTSTORM OR SANDSTORM:
                                                        VSBY 1/2 MILE OR LESS
                                                    8 = SMOKE OR HAZE
[NO. OF DAYS WITH]      [WEATHER - DAYS WITH]       9 = BLOWING SNOW
                                                    X = TORNADO
MAX 32 OR BELOW:   0    0.01 INCH OR MORE:   0
MAX 90 OR ABOVE:  31    0.10 INCH OR MORE:   0
MIN 32 OR BELOW:   0    0.50 INCH OR MORE:   0
MIN  0 OR BELOW:   0    1.00 INCH OR MORE:   0

[HDD (BASE 65) ]
TOTAL THIS MO.     0    CLEAR  (SCALE 0-3)  18
DPTR FM NORMAL     0    PTCLDY (SCALE 4-7)  13
TOTAL FM JUL 1     0    CLOUDY (SCALE 8-10)  0
DPTR FM NORMAL     0
```

```
[CDD (BASE 65) ]
TOTAL THIS MO.   677
DPTR FM NORMAL   161     [PRESSURE DATA]
TOTAL FM JAN 1  1966     HIGHEST SLP M ON M
DPTR FM NORMAL   282     LOWEST  SLP 29.64 ON 11

[REMARKS]
#FINAL-08-12#
```

Source: NOAA, National Weather Service, Hanford CA

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APPENDIX H: AQS AMP350 Raw Data Report

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

User ID: FUW

RAW DATA REPORT

Report Request ID: 1099649 Report Code: AMP350 May. 20, 2013

GEOGRAPHIC SELECTIONS

Tribal Code	State	County	Site	Parameter	POC	City	AQCR	UAR	CBSA	CSA	EPA Region	Method	Duration	Begin Date	End Date
	06	019	0007	44201										2012 08 10	2012 08 10

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

APPLICABLE STANDARDS

Standard Description
Ozone 1-hour Daily 2005

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
RAW DATA REPORT

May. 20, 2013

(44201) Ozone

SITE ID: 06-019-0007 POC: 1
COUNTY: (019) Fresno
CITY: (00000) Not in a city
SITE ADDRESS: 4706 E. DRUMMOND ST., FRESNO
SITE COMMENTS: ARB SITE NUMBER 1000244 NEW SITE 07/84.
MONITOR COMMENTS: 14

STATE: (06) California
AQCR: (031) SAN JOAQUIN VALLEY
URBANIZED AREA: (2840) FRESNO, CA
LAND USE: COMMERCIAL
LOCATION SETTING: SUBURBAN

CAS NUMBER: 10028-15-6
LATITUDE: 36.7055016969
LONGITUDE: -119.74235505
UTM ZONE:
UTM NORTHING:
UTM EASTING:
ELEVATION-MSL: 89
PROBE HEIGHT: 5

SUPPORT AGENCY: (0945) San Joaquin Valley Unified Air Pollution Control District
MONITOR TYPE: SLAMS
COLLECTION AND ANALYSIS METHOD: (087) INSTRUMENTAL ULTRA VIOLET ABSORPTI
PQAO: (0145) California Air Resources Board

REPORT FOR: AUGUST 2012

DURATION: 1 HOUR
UNITS: Parts per million
MIN DETECTABLE: .005

DAY	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																									0	
2																									0	
3																									0	
4																									0	
5																									0	
6																									0	
7																									0	
8																									0	
9																									0	
10	.034rl	.022rl	.006rl	AX	BD	.002rl	.014rl	.028rl	.043rl	.055rl	.073rl	.099rl	P.127rl	.110rl	.104rl	.081rl	.078rl	.077rl	.072rl	.065rl	.049rl	.038rl	.040rl	.049rl	22	.127
11																									0	
12																									0	
13																									0	
14																									0	
15																									0	
16																									0	
17																									0	
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25																									0	
26																									0	
27																									0	
28																									0	
29																									0	
30																									0	
31																									0	
NO.:	1	1	1			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
MAX:	.034	.022	.006			.002	.014	.028	.043	.055	.073	.099	.127	.110	.104	.081	.078	.077	.072	.065	.049	.038	.040	.049		
AVG:	.0340	.0220	.0060			.0020	.0140	.0280	.0430	.0550	.0730	.0990	.1270	.1100	.1040	.0810	.0780	.0770	.0720	.0650	.0490	.0380	.0400	.0490		

MONTHLY OBSERVATIONS: 22 MONTHLY MEAN: .0575 MONTHLY MAX: .127

1 Values marked with 'P' exceed the PRIMARY STANDARD of: .125
1 Values marked with 'S' exceed the SECONDARY STANDARD of: .125

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.

1 Daily maxima above primary standard
1 Daily maxima above secondary standard

QUALIFIER CODES:

Qualifier Code	Qualifier Description	Qualifier Type
AX	Precision Check	NULL
BD	Auto Calibration	NULL
rl	Other	REQEXC

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