

AIR QUALITY TREND ANALYSIS

There are many variables that can cause year-to-year variations in monitored pollutant levels, for example: weather, wildland fires, sampling frequency, upwind weather patterns, upwind emissions inventory, etc. Identifying air quality trends can be a difficult matter with a small database of representative years. The accuracy of our trend analysis grows with each year of data.

Ozone - Grass Valley (Table 17)

Analysis of the thirteen years of data allows us to make some solid observations. During the last thirteen years the number of days with violations of the CAAQS and NAAQS has increased during hot summers and decreased somewhat during cooler summers, and the annual hourly mean appears to show some upward movement, although 2004 proved to be an exception to the trend. In 1993 there were only six days with exceedances of the CAAQS and no days with exceedances of the NAAQS, in 1995 there were 2 exceedances of the NAAQS, in 1996 there were 20 days with exceedances of the CAAQS. The El Niño effect may have lowered exceedance days in 1997 and 1998 to 8 and 12, respectively. It is interesting to note that the annual hourly average increased in 1997 despite the reduced exceedance days. The BSA experienced some very hot and stagnant days during the periods of exceedances in Grass Valley and the transported pollutants clearly impacted this area. 1999 set a record for days with exceedances of the 1-hour CAAQS and 8-hour NAAQS, much of it due to the influence of the many wildfires in nearby counties. Overall, the year 2003 shows relatively moderate levels of ozone, very similar to 2001 and 2002. In 2003 the maximum 8-hour average was less than in 2002, but there was an 8.9% increase in the number of separate 8-hour averages exceeding the NAAQS. This was in all likelihood due to the weather in 2003 more than any increase in precursor pollutants. There were also 20 separate days with exceedances of the State 1-hour standard and of 75 separate hours exceeding 9.5 pphm. Although during 2004 ozone values in Grass Valley were at their lowest in years, this was most likely due to favorable weather conditions. Urban areas throughout California and much of the US also experienced record low ozone levels. Although July and August in 2005 were slightly warmer than in a typical year, resulting in numerous ozone exceedances, those warm months were offset by the cooler than typical months of April, May, June, September and October. Cooler temperatures typically result in fewer ozone exceedances.

Long Term Outlook: Although efforts are being made to reduce the emissions inventory in the upwind BSA and downwind Grass Valley area, those reductions are largely offset by increases in population and vehicle miles traveled. Until the upwind BSA makes substantial gains in its precursor reduction program and State and Federally implemented control programs come into effect, we expect to see continued violations of both the NAAQS and CAAQS with some variability due to weather from year to year.

Ozone – Truckee (Table 18)

The existing fourteen years of data reveals no exceedances of the NAAQS and only one exceedance of the CAAQS. In 1996 we recorded our highest single one-hour value to date in Truckee. As shown in Table 18, this exceedance was due to a significant and singular incursion of smoke from a wildfire northeast of Truckee. Wildfires create significant amounts of hydrocarbons and oxides of nitrogen. These precursors combined with high temperatures and extended periods of solar radiation have the potential to form high ozone levels in areas that would not normally see such levels. 2005 turned out to be a fairly typical ozone year for Truckee, with the hourly average appearing higher than in

previous years because of the absence of data during the low ozone months of November and December. The missing data was the result of an expensive air pump burning out.

Long Term Outlook: Ozone values in Truckee will most likely remain as they have been for the last 9 years, with the possibility of an upward creep as continued growth contributes to the local precursor levels. No doubt we may see the rare exceedance of the NAAQS or CAAQS, most likely due to wildfire smoke incursions or transported pollutants from the BSA or Reno, Nevada.

Ozone – Quincy (Table 19)

2005 showed some of the lowest ozone levels to date in Quincy. For the last 5 years of monitoring Quincy has had an annual hourly average lower than Truckee's. This is a reversal of an historical trend. Quincy has been creeping down as Truckee has been creeping up. Quincy has not had an exceedance of the State 1-hour standard in 8 years. To date Plumas County has been unclassified in its attainment status for ozone. Based on the last 8 years of data the CARB should officially designate Plumas County attainment for ozone sometime before the year 2050 (*don't hold your breath!*).

Long Term Outlook: We expect ozone values in Quincy will remain at the previous 6 year historical levels with a slim possibility of one exceedance of the CAAQS per year. If any exceedances are observed in the future, transport from the BSA will most likely play a role. In light of the ozone events in 1994 through 1996, Quincy air quality continues to need the close attention of the NSAQMD.

PM10 - Grass Valley (Tables 5, 12)

There were no PM10 samplers located in western Nevada County between August of 2003 through October of 2004. The one Hi-Volume sampler that operated within the Grass Valley city limits was shutdown permanently in July of 2000. The District did install a BAM in the Grass Valley area in October of 2004. Unfortunately, because of the complex terrain and resulting microclimates, it is very difficult to collect PM10 data that is representative of the Grass Valley area. The 12 years of Hi-Vol data collected at the downtown site showed a steady improvement in the annual geometric mean. This same improvement is not so evident with the twelve years of TEOM data. Numerous days with significant wildfire smoke incursions resulted in some of the highest PM10 values ever-recorded in Grass Valley during 1999. All nine exceedances of the CAAQS in 1999 were directly attributable to smoke transported into the foothill region from wildfires in Northern California. 2003 was one of our cleanest years to date, but because of the regrettable termination of the TEOM 2003 was also a non-representative year. Table 12 tells the story. 2005 was the first representative year of BAM data in Grass Valley. The BAM data shows the PM10 values to be at or near an historical low.

Long Term Outlook: It is expected that with continued, and possibly increased prescribed fire activity, PM10 levels could increase during years when weather is less conducive to good smoke dispersion. The anticipated increases in prescribed burning have the potential to wreak havoc on air quality in the foothill region. Although the much anticipated increases in prescribed burning have been forecasted for some years now, no real increases in prescribed burning have been observed.

PM10 – Truckee (Tables 6, 8, 13)

There are currently two PM10 samplers within the city limits of the Town of Truckee. They are located at the fire station in downtown Truckee. The Town of Truckee is located predominantly within a region known as the Martis Valley. Two PM2.5 samplers, added in late March of 1999, are

also located at the same fire station. The PM10 High Volume sampler located in Glenshire was terminated in July of 2000. We do not anticipate reactivating that sampler in the near future.

Glenshire: Eight and a half years of Hi-Vol data shows some improvement in air quality. There has been a slight, gradual decrease in the annual geometric mean, the highest 24-hour concentration, and the number of exceedances of the CAAQS. This may be due to consecutive wet winters and / or the increased use of natural gas as a heating fuel. There were no recorded exceedances of the CAAQS in 2000. Sampler was shutdown in July of 2000.

Fire Station: Fifteen years of Hi-Vol data show some improvement in PM10 levels, specifically during the early part of this century, however, PM10 took a dramatic upward swing in 2004 and 2005. Twelve years of TEOM data showed Truckee air quality has been quite poor but has improved greatly since 2000. The TEOM recorded only 4 exceedances of the CAAQS in 2003, but the data for the year was incomplete. In September the District retired the TEOM and replaced it with a BAM. The BAM recorded 3 exceedances of the CAAQS during the months of October, November and December of 2003. In 2004 the BAM recorded 48 days exceeding the State 24-hour standard, and 32 such days in 2005. There were no recorded exceedances of the PM2.5 NAAQS.

Long Term Outlook: Considering projected population increases coupled with increasing local mitigation efforts, the District expects to see continued poor air quality with some potential for a slowing or even a reversal of the current problem. The anticipated increases in prescribed burning pose a serious threat to an air shed already overburdened with a variety of particulate matter sources. The threat of federal non-attainment is real. Increased effort should be made to mitigate and eliminate particulate sources within the Martis Valley. The anticipated increases in prescribed burning have the potential to overwhelm all existing particulate mitigation efforts currently in place. Expected rising particulate levels from increased open burning may only be offset slightly from the increased use of natural gas as a heating fuel in the Truckee area. It should be noted that the anticipated increase in prescribed burning has yet to materialize, but there is still a chance that such an increase may occur within the next 5 – 10 years.

PM10 – Quincy (Tables 11, 14)

Excluding wildfires, 2005 saw the highest number of exceedances of the CAAQS since 1995 on the continuous PM10 sampler. The Hi-Volume sampler recorded only 1 exceedance of the CAAQS during the same period. There were no continuous PM10 data recorded in Quincy during 2004. The High Volume PM10 sampler in Quincy recorded 0 exceedances of the CAAQS in 2004.

There are now two PM10 samplers located in Quincy. One is a BAM sampler and the other is a CARB - owned, District - operated Hi-Vol sampler. A PM2.5 sampler was added in early 1999. Almost twelve years of TEOM data show air quality has improved dramatically in the Quincy area. The TEOM was retired from service in August of 2003 as it had reached the end of its useful life. The TEOM was replaced with a BAM during the fall of 2004. The highest 24 hour concentration recorded in 2004 was a 49 ug/m³ on the Hi-Volume sampler. Despite the possible aberration 2005 data might represent, it appears that the efforts made by the NSAQMD and Plumas county in Quincy over the last 14 years have really paid off. The NSAQMD considers Quincy to be a real air quality success story.

Long Term Outlook: Since Quincy is making multiple efforts to clean up their local air, through banning open burning and upgrading non-EPA certified woodstoves, it seems very likely that air quality will improve over the next 5 - 10 years, if population growth doesn't negate the current trend. This positive trend could be reversed if the anticipated increases in prescribed burning become

a reality. Increased oversight of the U.S. Forest Service prescribed burning program by the NSAQMD will take on a new urgency. The anticipated increases in prescribed burning have the potential to overwhelm all existing particulate mitigation efforts currently in place.

PM10 – Loyalton (Table 9)

There is one Hi-Vol sampler located behind the Loyalton Hospital adjacent to the Loyalton High School Agricultural area. The sampler was turned off in July 2000 and was re-activated in July 2001. It should remain in service for many years to come. Over the last thirteen years this site has averaged almost 4 exceedances of the CAAQS per year. 2005 was a typical year for Loyalton with only 4 exceedances of the CAAQS. At this point in time no discernible pattern has surfaced for this site, though there is some indication that air quality has improved somewhat, most likely due to wet winters. Some exceedances have occurred in the summer, some in the winter. Some violations were clearly due to nearby wildland fires and local agricultural operations. Loyalton air quality appears to be stabilized.

Long Term Outlook: In January of 2001 the Sierra Pacific Industries lumber mill in Loyalton shut down, most likely forever. The 15 – 20 tons of PM10 no longer emitted by the mill each year will probably not be noticed by the PM10 sampler. If we see any reduction in PM10 levels it will probably come from reduced woodstove use when laid-off workers move away. Other factors remaining constant, the PM10 levels in Loyalton will remain fairly consistent with past years. A recent development that could produce a small increase in ambient PM10 levels is the renewed interest in Loyalton as a bedroom community for Reno and Truckee.

PM10 – Chester (Tables 10, 15)

The one Hi-Vol sampler located near the downtown area of Chester was removed from Chester in January, 2004. Due to the excellent correlation between the Hi-Vol and the BAM we now rely solely on the BAM for our Chester PM10 data. Fourteen years of data show air quality may be improving slightly. The apparent trend toward an improvement in Chester air quality may be the result of recent wet years in Northern California. The Chester BAM recorded six exceedances of the CAAQS during 2005, however, the annual arithmetic mean was close to Chester's all-time low at 20.4 µg/m³.

Long Term Outlook: It is the District's best guess that annual PM10 levels in Chester will probably begin to slowly rise as more people move into the Chester area. The greatest increases in PM10 levels will most likely be realized in 1 to 5 years with the anticipated increases in prescribed burning. The NSAQMD stands ready to monitor and document these increases. The anticipated increases in prescribed burning have the potential to overwhelm all existing particulate mitigation efforts currently in place.

PM10 – Portola (Table 7)

In 1995 the NSAQMD began monitoring PM10 in the downtown area of Portola at the request of the city council. Portola was second only to Truckee in its high levels of particulate matter, but has now surpassed Truckee. With only 5 ½ years of data there is no discernible trend, but it is likely that PM10 levels will remain consistently high if no efforts are made to mitigate the existing problem. The sampler was turned off in July of 2000, and will not be re-activated. A PM2.5 sampler was added to this location in early 1999. Additionally, a PM2.5 BAM was added to this site in late 2002.

Long Term Outlook: As far as PM10 goes there is no long-term outlook because we no longer monitor for that pollutant (*see PM2.5*)

