

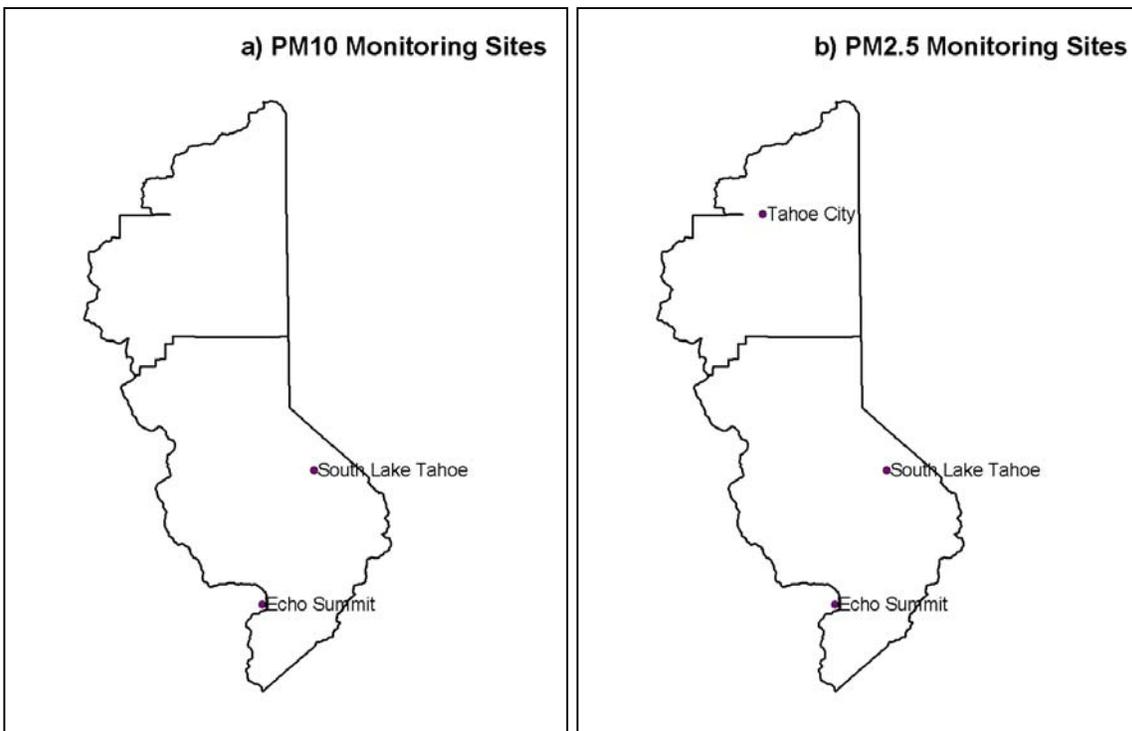
### C. Lake Tahoe Air Basin



The Lake Tahoe Air Basin comprises the eastern portions of two air districts, the Placer County APCD and the El Dorado County AQMD. The air basin currently violates the State 24-hour PM10 standard, but does not violate the annual average standard. The entire air basin is designated as attainment for the State annual average PM2.5 standard.

Figure C-1 shows the location of PM10 (a) and PM2.5 (b) monitoring sites throughout the Lake Tahoe Air Basin.

**Figure C-1. PM10 and PM2.5 Monitoring Sites throughout the Air Basin.**



## Placer County APCD

Table C-1 provides information on yearly variations in the highest PM<sub>2.5</sub> concentrations recorded across the Placer County APCD portion of the air basin in 2001 through 2003. No PM<sub>10</sub> monitor is currently operated in the District. Only limited PM<sub>2.5</sub> monitoring data are available from a recently installed continuous monitor in Tahoe City. The highest 24-hour PM<sub>2.5</sub> concentration recorded so far is well below the State 24-hour PM<sub>10</sub> standard of 50 µg/m<sup>3</sup>.

**Table C-1. PM<sub>10</sub> and PM<sub>2.5</sub> Air Quality in the Placer County APCD.**

Year	PM <sub>10</sub> (µg/m <sup>3</sup> )			PM <sub>2.5</sub> (µg/m <sup>3</sup> )	
	Calculated Days over State Std.	Max 24-hour (Std.=50)	Max Annual Average (Std.=20)	Max 24-hour*	Max Annual Average (Std.=12)
2001	No Monitor			No data	No data
2002				No data	No data
2003				27	Incomplete Data

\* The maximum 24-hour PM<sub>2.5</sub> values are provided for information only.

Table C-2 provides the 24-hour and annual designation values for the State standards for the 2001-2003 period. Designation values represent the highest 24-hour PM<sub>10</sub> concentration measured during the three year period, after concentrations measured during highly irregular and infrequent events have been excluded, and the highest estimated PM<sub>10</sub> and PM<sub>2.5</sub> annual average in the same period. The designation values are determined for each site, and the highest site is used for determining an area's designation. Because no PM<sub>10</sub> monitor is operated in this portion of the air basin, the Placer County APCD portion of the air basin is designated as nonattainment for the State 24-hour PM<sub>10</sub> standard based on data from the El Dorado AQMD portion of the air basin. The District is designated as attainment for the State annual PM<sub>2.5</sub> standard based on the more complete data from the El Dorado AQMD monitoring sites which includes the expected high site in the air basin.

**Table C-2. Air District Level Designation Values\* for the State PM<sub>10</sub> and PM<sub>2.5</sub> Standards (2001-2003 Period).**

	PM <sub>10</sub> (ug/m <sup>3</sup> )		PM <sub>2.5</sub> (ug/m <sup>3</sup> )
	24-Hour (Std.=50)	Annual Average (Std.=20)	Annual Average (Std.=12)
Designation Value	No Monitor	No Monitor	Incomplete Data

\* Designation value is the value used for determining attainment status. It is the highest measured value over three years after excluding highly irregular or infrequent events.

Table C-3 provides designation values for each monitoring site in the air district to provide further information on the geographic distribution of concentrations. As discussed above, only the recently established Tahoe City PM2.5 monitor is operated in the Placer County APCD portion of the air basin.

**Table C-3. Monitoring Site Level Designation Values\* for the State PM10 and PM2.5 Standards (2001-2003 Period).**

Site	PM10 (ug/m <sup>3</sup> )		PM2.5 (ug/m <sup>3</sup> )
	24-Hour (Std.=50)	Annual Average (Std.=20)	Annual Average (Std.=12)
Tahoe City	No Monitor	No Monitor	Incomplete Data

\* Designation value is the value used for determining attainment status. It is the highest measured value over three years after excluding highly irregular or infrequent events.

**Figure C-2. Seasonal Variation in PM2.5 Concentrations.**

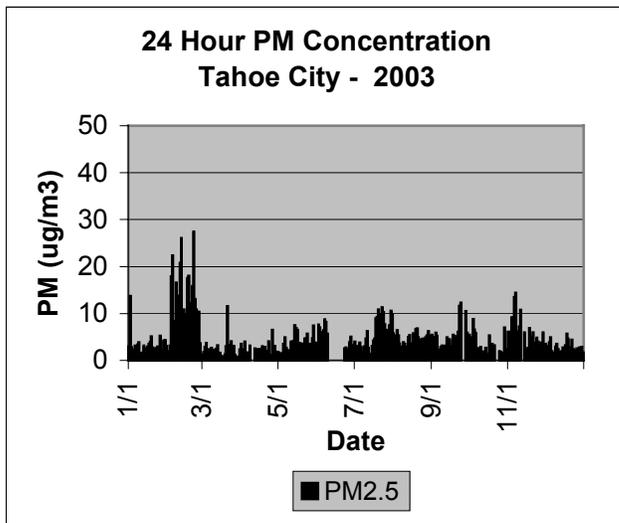


Figure C-2 illustrates the daily variation in PM2.5 levels throughout 2003 at Tahoe City. PM2.5 levels are highest in February and are low all through the rest of the year. The colder, stagnant conditions during the winter are conducive to the buildup of PM. In addition, increased activity from residential wood burning may also occur. Although no PM10 data is available, based on 2001-2003 monitoring data in El Dorado AQMD, we estimate that on an

annual average PM2.5 comprises approximately 40 percent of PM10. Further, based on similarities with El Dorado AQMD, we estimate that the fraction of PM2.5 comprised of secondary ammonium nitrate and sulfate is approximately 40 percent.

**Figure C-3. Hourly Variation in PM2.5 Concentrations.**

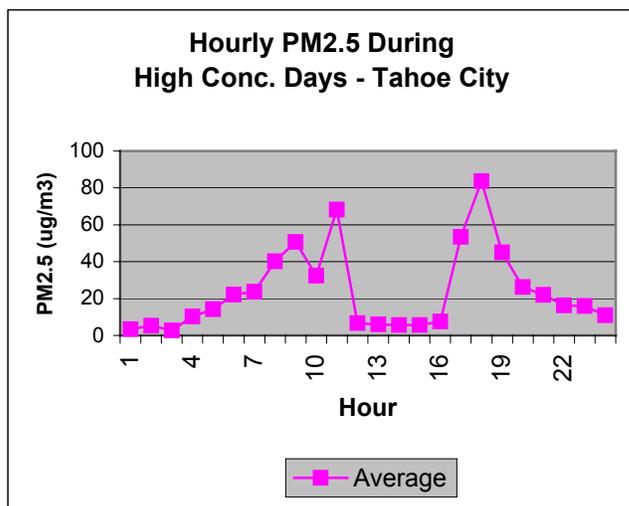


Figure C-3 presents the average hourly variation in PM2.5 levels for the days with the highest PM2.5 concentrations. PM2.5 levels are highest in the morning from 7 to 10 a.m., and in the evening from 5 to 7 p.m., corresponding to commute hour traffic. Peak evening concentrations generally reflect the influence of lowering inversion heights which trap pollutants close to the surface, as well as increased activity from evening commute traffic

and residential wood combustion during winter months.

### El Dorado County AQMD

Table C-4 provides information on yearly variations in the highest PM10 and PM2.5 concentrations recorded across the El Dorado County AQMD portion of the air basin in 2001-2003. During this period, particulate levels are estimated to have exceeded the 24-hour State PM10 standard of 50  $\mu\text{g}/\text{m}^3$  six times, but did not exceed the State annual standard of 20  $\mu\text{g}/\text{m}^3$ . In 2001 and 2003, PM2.5 levels were well below the State annual standard of 12  $\mu\text{g}/\text{m}^3$ .

**Table C-4. PM10 and PM2.5 Air Quality in El Dorado County APCD.**

Year	PM10 ( $\mu\text{g}/\text{m}^3$ )			PM2.5 ( $\mu\text{g}/\text{m}^3$ )	
	Calculated Days over State Std.	Max 24-hour (Std.=50)	Max Annual Average (Std.=20)	Max 24-hour*	Max Annual Average (Std.=12)
2001	0	50	17	31	8
2002	0	46	17	27	Incomplete Data
2003	6	52	15	24	7

\* The maximum 24-hour PM2.5 values are provided for information only.

Table C-5 provides the 24-hour and annual designation values for the State standards for the 2001-2003 period. Designation values represent the highest 24-hour PM10 concentration measured during the three year period, after concentrations measured during highly irregular and infrequent events have been excluded, and the highest estimated PM10 and PM2.5 annual average in the same period. The designation values are determined for each site, and the highest site is used for determining an area's designation. Based on these data, the El Dorado AQMD portion of the air basin is designated as nonattainment for the State 24-hour PM10 standard. The District is designated as attainment for the State annual PM2.5 standard.

**Table C-5. Air District Level Designation Values\* for the State PM10 and PM2.5 Standards (2001-2003 Period).**

	PM10 (ug/m <sup>3</sup> )		PM2.5 (ug/m <sup>3</sup> )
	24-Hour (Std.=50)	Annual Average (Std.=20)	Annual Average (Std.=12)
Designation Value	52	17	8

\* Designation value is the value used for determining attainment status. It is the highest measured value over three years after excluding highly irregular or infrequent events.

Table C-6 provides designation values for each monitoring site in the air district to provide further information on the geographic distribution of concentrations. Concentrations are highest at the urban South Lake Tahoe monitoring site, and are considerably lower at Echo Summit.

**Table C-6. Monitoring Site Level Designation Values\* for the State PM10 and PM2.5 Standards (2001-2003 Period).**

Site	PM10 (ug/m <sup>3</sup> )		PM2.5 (ug/m <sup>3</sup> )
	24-Hour (Std.=50)	Annual Average (Std.=20)	Annual Average (Std.=12)
Echo Summit	26	7	Incomplete Data
South Lake Tahoe	52	17	8

\* Designation value is the value used for determining attainment status. It is the highest measured value over three years after excluding highly irregular or infrequent events.

**Figure C-4. Seasonal Variation in PM2.5 Concentrations.**

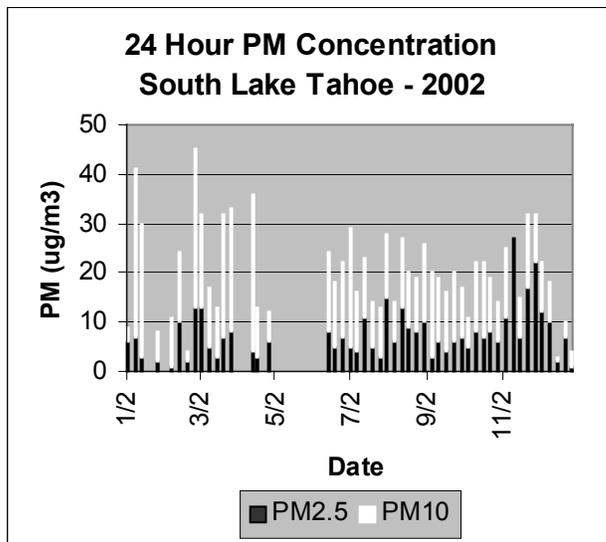


Figure C-4 illustrates the variation in PM10 and PM2.5 levels throughout the year at South Lake Tahoe. The total height of the bars represents PM10 concentrations, while the height of the black portion of the bars represents the PM2.5 fraction. PM10 levels are highest during the winter and spring, with the higher PM2.5 concentrations occurring during the winter. The colder, stagnant conditions during the winter are conducive to the buildup of PM. In addition, increased activity from residential

wood combustion may also occur.

The coarse fraction (particles between PM2.5 and PM10 in size) was largest during the spring. The coarse fraction is primarily due to activities that resuspend dust, such as emissions from paved and unpaved roads and construction. Based on 2000-2003 monitoring data in El Dorado County AQMD, we estimate that during the fall and winter, approximately 50 percent of ambient PM10 consists of PM2.5, while on an annual average PM2.5 comprises approximately 40 percent of PM10.

**Figure C-5. Hourly Variation in PM2.5 Concentrations.**

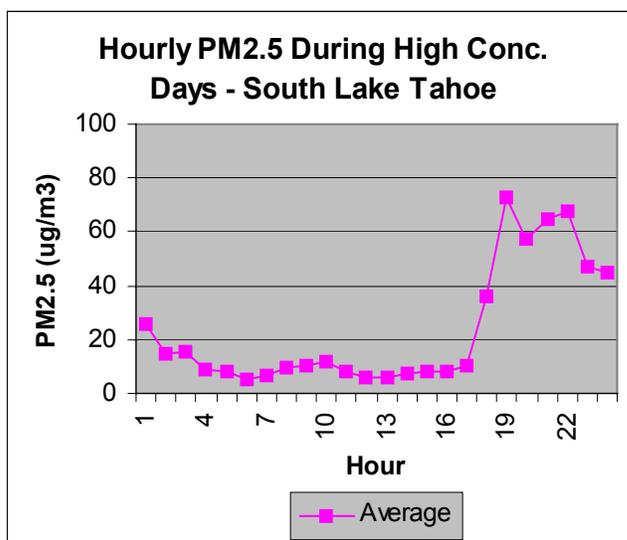


Figure C-5 presents the average hourly variation in PM2.5 levels for the days with the highest PM2.5 concentrations. PM2.5 concentrations are highest during the evening from 5 to 11 p.m. Peak evening concentrations generally reflect the influence of lowering inversion heights which trap pollutants close to the surface, as well as increased activity from evening commute traffic and residential wood burning during winter months.

Only limited data on chemical composition are available. Based on 1999-2001 PM10 composition data and estimated PM2.5 content in PM10, we estimate that, on an annual average basis, the fraction of PM2.5 comprised of secondary ammonium nitrate and ammonium sulfate is approximately 40 percent.