

DRAFT

# Alaska's Air Monitoring 2008 Network Plan

## Chapter 5 - Juneau



**Please provide comments by August 17, 2007 to:**

State of Alaska Department of Environmental Conservation  
Division of Air Quality  
Air Monitoring and Quality Assurance Section  
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Anchorage, AK 99501

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## 5 JUNEAU MONITORING SITES

### 5.1 *General Information*

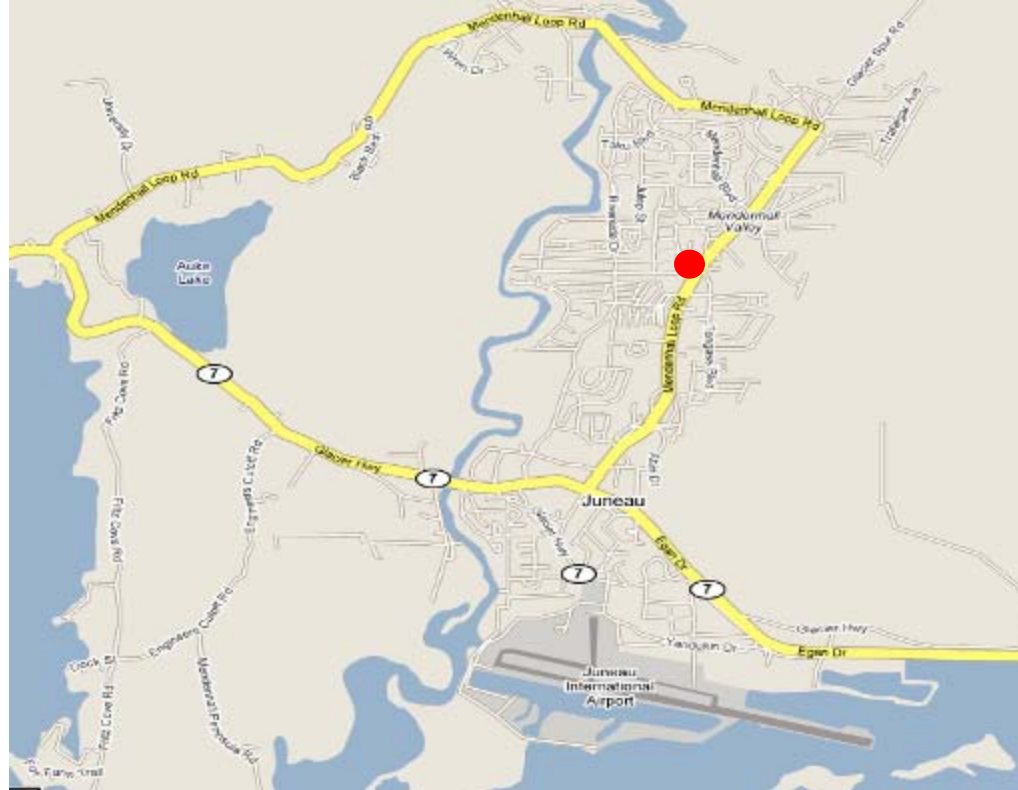
The City and Borough of Juneau is located in Southeast Alaska on the mainland side of the Gastineau Channel across from Douglas Island. The borough encompasses 2,594 square miles of land and 488 square miles of water. Juneau has a mild, maritime climate with average winter temperatures ranging from 25°F to 35°F; and summer temperatures ranging from 44°F to 65°F. Annual precipitation varies throughout the region with 92 inches in downtown Juneau and 54 inches at the airport ten miles to the west. Snowfall averages 101 inches at the airport. The population<sup>1</sup> of the Juneau-Douglas area is 30,987.

Currently, there is one particulate matter monitoring site in Juneau which is operated by Alaska Department of Environmental Conservation staff. The AQS ID number for the site is 02-110-0004 Floyd Dryden Middle School (PM<sub>10</sub> and PM<sub>2.5</sub>). Figure 5.1:1 below indicates the sites location.

Juneau was designated non-attainment for PM<sub>10</sub> on November 15, 1990. The two primary sources of PM<sub>10</sub> required the community to develop two separate action plans to minimize the exceedance of the standard. The first was to start paving roads to minimize the impact of dust and the second was to issue notices when people could use their woodstoves to reduce the impact from smoke. The City of Juneau and the Alaska Department of Environmental Conservation are currently in the process to re-designate Juneau as a maintenance area with the US Environmental Protection Agency. Definitions of designations and siting criteria can be found in Appendix A

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<sup>1</sup> Population data 2005 U.S. Census.



**Figure 5.1:1: Street map of Mendenhall Valley. Red circle indicates the monitoring site.**

As of October 2001 one site has been terminated. The site is (with AQS ID number):

02-110-26     Lemon Creek (PM<sub>2.5</sub>)

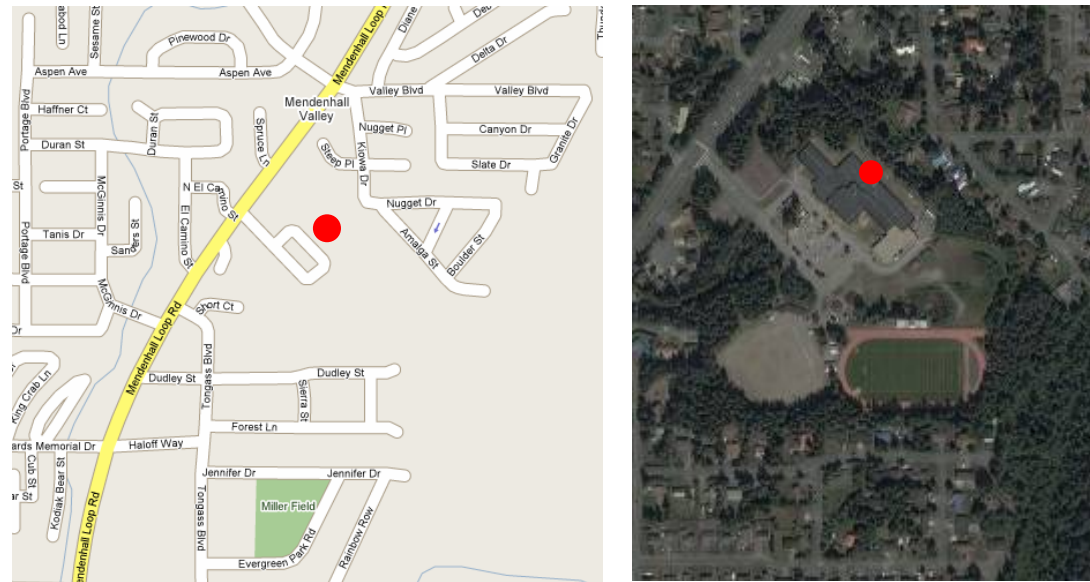
## 5.2 FLOYD DRYDEN MIDDLE SCHOOL SITE - JUNEAU

3800 Mendenhall Loop Road  
Parameters: PM<sub>2.5</sub>, PM<sub>10</sub>

AQS ID 02-110-0004  
Established: January 1, 1980

### 5.2.1 Site Information

The Juneau site is located on the roof of the Floyd Dryden Middle School in the Mendenhall Valley off of Mendenhall Loop Road between North El Camino St. and Spruce Ln. at latitude 58° 23'30", longitude -134 °33'30", and 45 meters (143 feet) above sea level. Figure 5.2:1 shows a street and satellite image of the site and surrounding area map of the surrounding area. The site is located in the middle of a residential area. Floyd Dryden is a neighborhood-scale, population-oriented site.



**Figure 5.2:1:** Map and satellite image of the Floyd Dryden monitoring site. The red circle indicates the monitoring site.

### 5.2.2 Sources

The Mendenhall Valley is located northwest of Juneau and separated from the Lemon Creek Valley by the north-south oriented Heintzelman Ridge. With the exception of smoke from Canada, pollution sources outside the valley are not expected to impact the monitoring site at Floyd Dryden Middle School. The sources of particulate matter within the Mendenhall Valley include: residential wood smoke, dust from ball fields and playgrounds, automobile exhaust, fugitive dust from construction/land clearing and smoke from open burning.

Juneau International Airport (1050 passengers' daily average) is two miles away at the south end of Mendenhall Valley, and may affect the Floyd Dryden site when winds are from the south. Within five miles are a gravel pit and the Mendenhall Glacier, both of which may cause crustal material to be re-entrained during favorable meteorological conditions. On occasion wildfire smoke from Western Canada has been known to impact the Mendenhall Valley, carried by long range transport.

### **5.2.3 Monitors**

The Floyd Dryden Site is currently equipped with:

- PM<sub>2.5</sub> (SLAMS) – Two Thermo Electron (formerly Rupprecht and Pattashnick) Partisol 2000 samplers. Two samplers run on a 1-in-6 day alternating sampling schedule resulting in a 1-in-3 day sampling frequency.
- PM<sub>10</sub> (SPM) – One General Metal Works high-volume sampler. Running on a 1-in-6 day sampling schedule.
- PM<sub>2.5</sub> (SPM) – A single Thermo Electron TEOM 1400a continuous monitor was installed to provide information in real time for evaluating the Air Quality Index.

### **5.2.4 Siting**

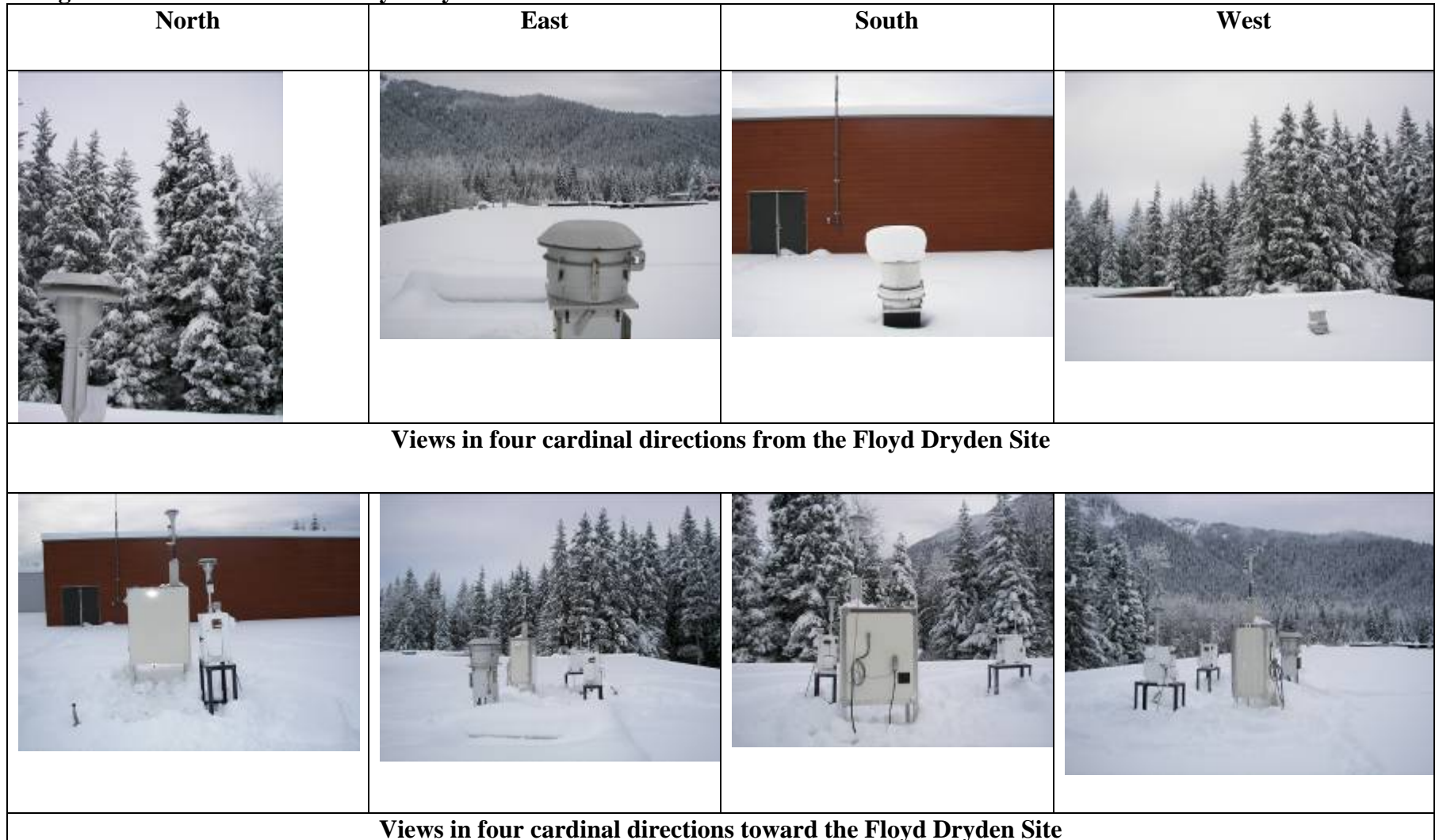
The samplers are installed on the roof of Floyd Dryden Middle School, approximately six meters (19 feet) above the ground. There is a furnace flue approximately 20 meters (64 feet) to the East of the sampler roof location. There is also a nearby dryer vent coming out of the building on the ground level directly below the current sampler location. The school has a penthouse which is approximately four meters above the roof and 6 meters (19 feet) to the South of the closest monitor.

The samplers are installed approximately 65 meters (207 feet) from the nearest traffic lane. There is a row of trees approximately 25 meters (80 feet), at the closest point, skirting the northern exposure of the site. The trees are approximately 15 meters (48 feet) tall, and come nearest to the monitoring site to the north at 25 meter distance. Airflow is generally uninterrupted with the exception of the trees to the north-northeast. These trees are not considered to be a barrier because most elevated PM concentrations occur during winter inversions and/or during times when the wind is less than five mph. Under these conditions the particulate concentrations are thought to have homogeneous dispersion. The monitors are sites on the north side of the school away from the parking lot.

### **5.2.5 Traffic**

The Floyd Dryden site is approximately 65 meters east of Mendenhall Loop Road (the main roadway into the valley; 12,770 vehicles per day). The roads are paved and, in the winter, sanded for traction.

**Figure 5.2:2: Pictures of the Floyd Dryden site.**



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