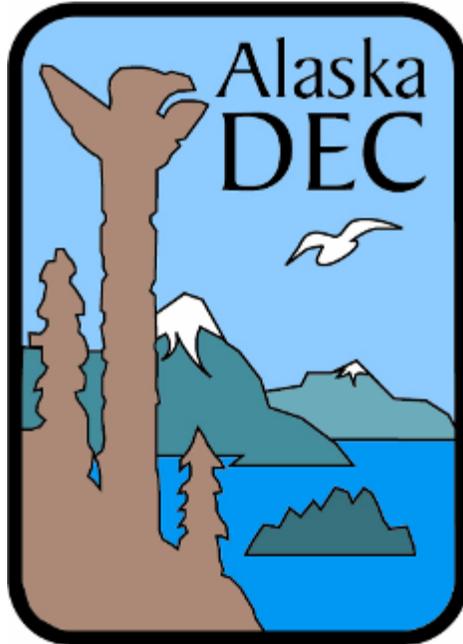


Alaska's Air Monitoring 2011 Network Plan

Chapter 4 - Juneau



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4 JUNEAU MONITORING SITES

4.1 General Information

The City and Borough of Juneau is located in Southeast Alaska, including the mainland side of Gastineau Channel and Douglas Island. The city and 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 average 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 north-west. Snowfall averages 101 inches at the airport. The population¹ of the Juneau-Douglas area is 30,700.

Currently there is one particulate matter monitoring site in Juneau which is operated by Alaska DEC staff. The AQS ID number for the site is 02-110-0004, Floyd Dryden Middle School (PM₁₀ and PM_{2.5}). Figure 4.1:1 below indicates the location of the site.

Juneau was designated non-attainment for PM₁₀ on November 15, 1990. The two primary sources of PM₁₀ required the community to develop two separate action plans to minimize exceedance of the standard. The first was to start paving streets to minimize the impact of road-dust and the second was to issue air quality notices when residents would limit use their woodstoves to reduce the impact from wood-smoke. The City and Borough of Juneau and the Alaska DEC has been re-designate as a PM₁₀ maintenance area with the US EPA. Definitions of designations and siting criteria can be found in Appendix A.

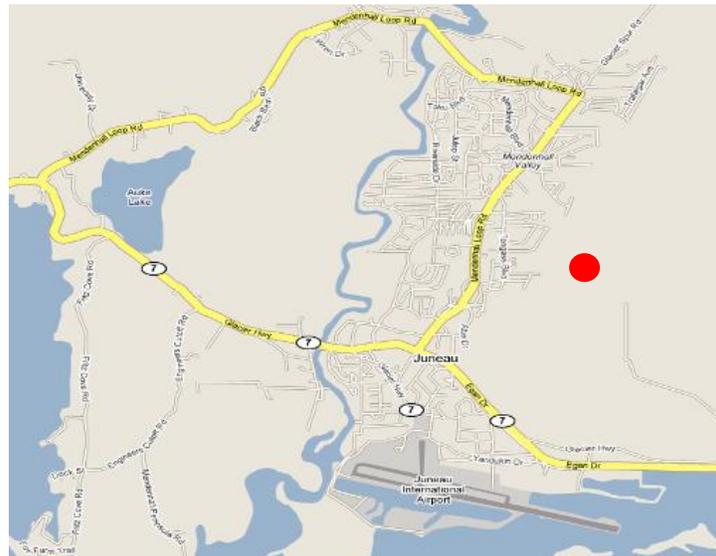


Figure 4.1:1: Street map of Mendenhall Valley. Red circle indicates the monitoring site.

¹ Population data 2005 U.S. Census.

4.2 FLOYD DRYDEN MIDDLE SCHOOL SITE - JUNEAU

3800 Mendenhall Loop Road
Parameters: PM_{2.5}, PM₁₀

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

4.2.1 Site Information

The Juneau site is located on the roof of Floyd Dryden Middle School in the Mendenhall Valley, off Mendenhall Loop Road between North El Camino Street and Spruce Lane. The latitude is 58° 23' 30" north (58.388889), the longitude is 134° 33' 30" west (-134.565556), and the site is located 45 meters (143 feet) above sea level. Figure 4.2:1 is a satellite image of the site and a map of the surrounding area. The site is located in the middle of a residential area and is a neighborhood-scale, population-oriented site.

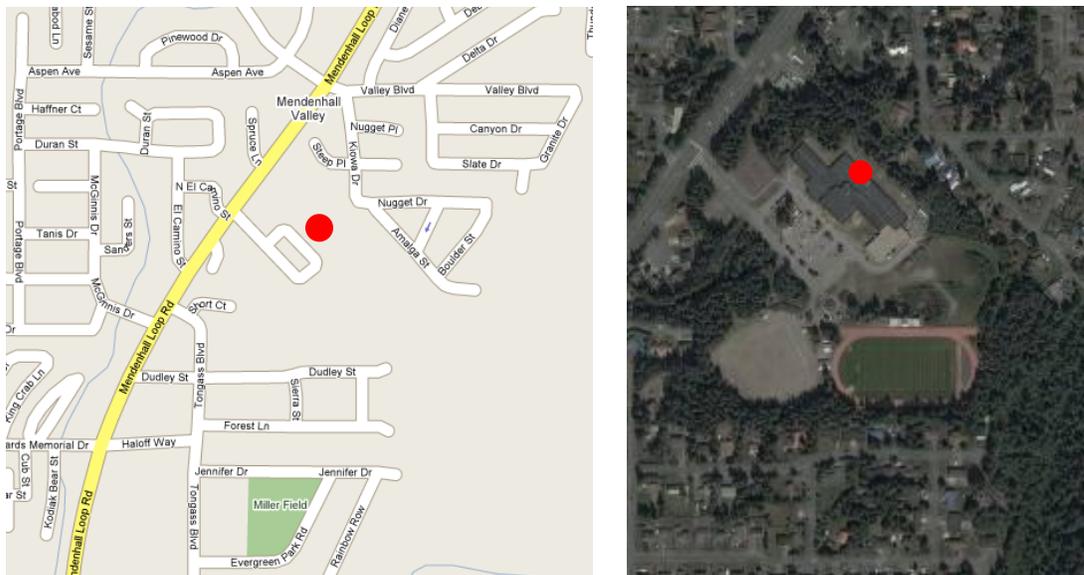


Figure 4.2:1: Map and satellite image of the Floyd Dryden monitoring site. The red circle indicates the monitoring site.

4.2.2 Sources

The Mendenhall Valley is located northwest of Juneau and is separated from the Lemon Creek Valley by the west-east oriented Heintzelman Ridge. With the exception of wildfire smoke from Canada and the Alaskan mainland, 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, playgrounds, road-dust tracking, automobile exhaust, fugitive dust from construction/land clearing, and smoke from open burning.

Juneau International Airport (average of 1050 passengers daily) is 3.2 km (2 miles) away at the south end of Mendenhall Valley, and may potentially affect the Floyd Dryden site when winds are from the south. Within 8 km (5 miles) are a gravel pit and the

Mendenhall Glacier, both of which may cause crustal material to be re-entrained during dry windy conditions. On occasion during summer months, wildfire smoke, carried by long range transport from North-Western Canada, has been known to impact the Mendenhall Valley.

4.2.3 Monitors

The Floyd Dryden Site is currently equipped with:

- PM_{2.5} (SPM) – One Thermo Scientific (formerly Rupprecht and Patashnick) Partisol 2000 FRM sampler running on a 1-in-6 day sampling schedule.
- PM₁₀ (SLAM) – Two Thermo Scientific Partisol 2000 FRM samplers running collocated on a 1-in-6 day sampling schedule.
- PM_{2.5} (SLAM) – A single MetOne Instruments BAM 1020 Beta Attenuation continuous sampler provides information in real time for evaluating the Air Quality Index.

4.2.4 Siting

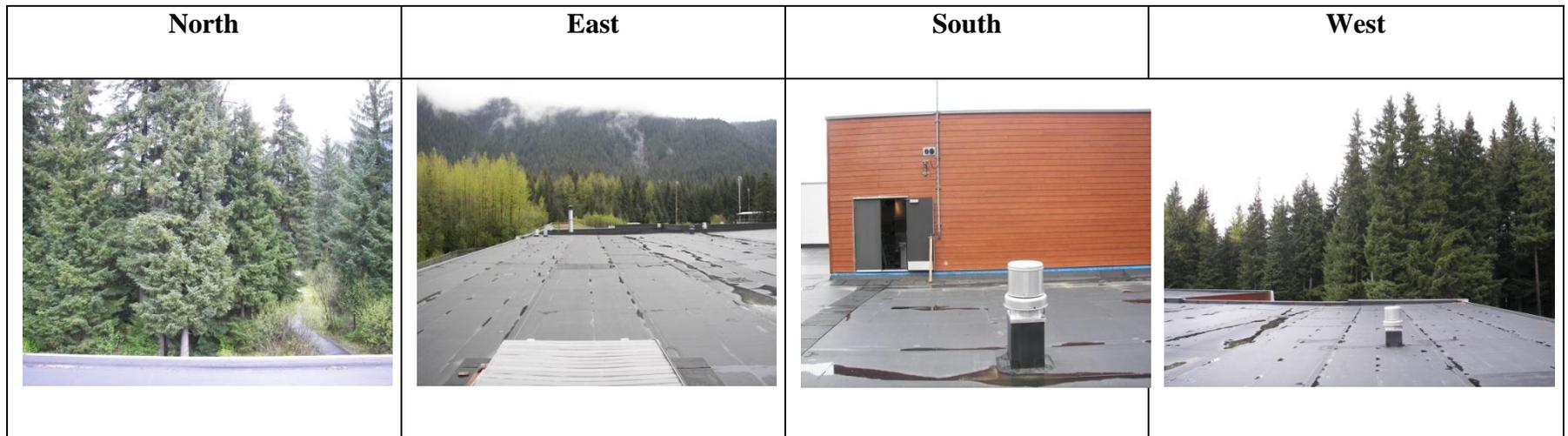
The samplers are installed on the roof of Floyd Dryden Middle School, approximately six meters (19 feet) above the ground. There is a furnace flue approximately 20 meters (64 feet) to the east of the sampler roof location. There is also a nearby dryer vent coming out of the building on the ground level 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. A row of 15 meter (48 feet) tall trees are within 25 meters (80 feet) on the northern side of the site. 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 on the north side of the school and away from the parking lot.

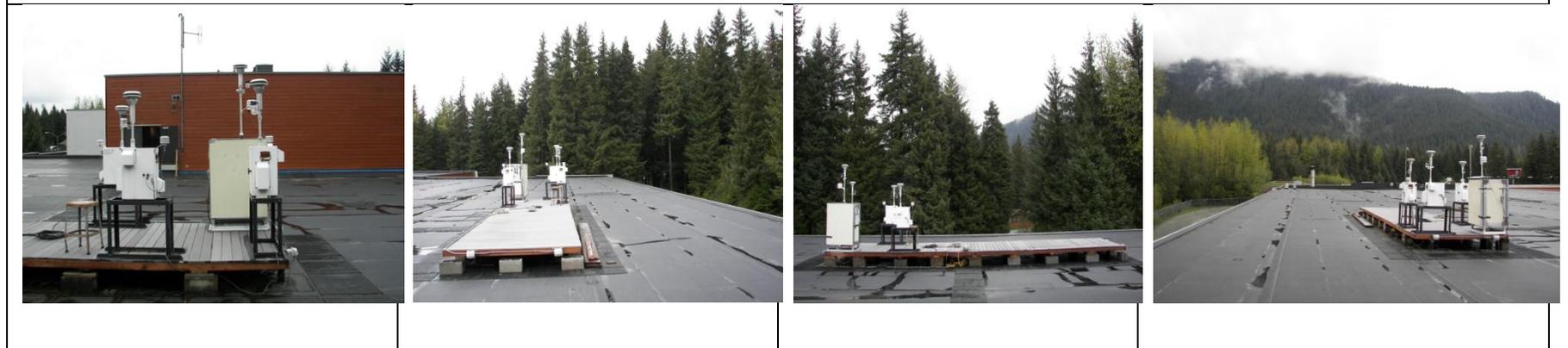
4.2.5 Traffic

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

Figure 4.2:2: Pictures of the Floyd Dryden site.



Views in four cardinal directions from the Floyd Dryden Site



Views in four cardinal directions toward the Floyd Dryden Site