

# **State of Hawaii 2012 Air Monitoring Network Plan**

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# Table of Contents

<b>List of Tables .....</b>	<b>2</b>
<b>List of Figures .....</b>	<b>2</b>
<b>Acronyms and Definitions.....</b>	<b>3</b>
<b>Introduction .....</b>	<b>4</b>
<b>1.0 Network Purpose and Design.....</b>	<b>5</b>
1.1 Overview.....	5
1.1.1 SLAMS.....	5
1.1.2 SPMS.....	5
1.2 Network Design and Review Process.....	6
1.2.1 Monitoring Objectives and Site Types.....	6
1.2.2 PM <sub>2.5</sub> Network Changes.....	7
1.3 Organizational Structure and Responsibilities .....	7
<b>2.0 Network Evaluation .....</b>	<b>8</b>
2.1 PM <sub>10</sub> Network.....	8
2.2 PM <sub>2.5</sub> Network.....	10
2.3 O <sub>3</sub> Network .....	12
2.4 Pb Network .....	14
2.5 CO Network .....	15
2.6 NO <sub>2</sub> Network.....	16
2.7 SO <sub>2</sub> Network .....	17
2.8 NCore .....	19
2.9 H <sub>2</sub> S Network .....	19
2.10 Network Summary .....	19
2.11 Site Closures .....	20
2.12 Site Additions.....	20
2.13 Modifications.....	26
<b>3.0 Detailed Site Descriptions .....</b>	<b>27</b>
(DH) Honolulu.....	28
(KA) Kapolei SLAMS .....	30
Kapolei NCore .....	32
(PC) Pearl City.....	34
(SI) Sand Island.....	36
(KH) Kihei .....	38
(NI) Niumalu .....	40
(HL) Hilo .....	42
(KN) Kona.....	44
(MV) Mountain View .....	46
(OV) Ocean View.....	48
(PA) Pahala .....	50
(PE) Puna E.....	52

## List of Tables

Table 2-1	PM <sub>10</sub> Network and Concentrations for the MSA.....	8
Table 2-2	PM <sub>10</sub> Minimum Monitoring Requirements for the MSA .....	8
Table 2-3	PM <sub>2.5</sub> Network and Concentrations for the MSA .....	10
Table 2-4	PM <sub>2.5</sub> Minimum Monitoring Requirements for the MSA.....	10
Table 2-5	PM <sub>2.5</sub> Collocated Network.....	11
Table 2-6	O <sub>3</sub> Design Values for the MSA.....	12
Table 2-7	O <sub>3</sub> Minimum Monitoring Requirements for the MSA .....	12
Table 2-8	Minimum Pb Monitoring Requirement at NCore .....	14
Table 2-9	Minimum NO <sub>2</sub> Near-Road Monitoring Requirements .....	16
Table 2-10	Minimum SO <sub>2</sub> Monitoring Requirement.....	17
Table 2-11	Number of Stations by Pollutant or Program.....	19
Table 2-12	NO <sub>2</sub> Near-Road Candidate Sites: Description and Rank .....	22
Table 2-13	Summary of Network Changes .....	26
Table 3-1	State of Hawaii Ambient Air Monitoring Network .....	27

## List of Figures

Figure 2-1	PM <sub>10</sub> Network.....	9
Figure 2-2	PM <sub>2.5</sub> Network.....	11
Figure 2-3	O <sub>3</sub> Network .....	13
Figure 2-4	Pb Monitoring Station.....	14
Figure 2-5	CO Network .....	15
Figure 2-6	NO <sub>2</sub> Network.....	16
Figure 2-7	SO <sub>2</sub> Network .....	18
Figure 2-8	Location of Waikoloa Station .....	20
Figure 2-9	H1 Punahou Large Scale View .....	23
Figure 2-10	H1 Punahou at Shriner's Hospital.....	24
Figure 2-11	H1 Punahou Off-Ramp .....	24
Figure 2-12	H1 PC Large Scale View .....	25
Figure 2-13	H1/Kaonohi Close-Up View .....	26

## Acronyms and Definitions

AADT	Annual Average Daily Traffic
AQI	Air Quality Index
ASAS	State of Hawaii Department of Health Air Surveillance and Analysis Section
BAM	Beta-Attenuation Mass Monitor
CAB	State of Hawaii Department of Health Clean Air Branch
CBSA	Core-Based Statistical Areas
CFR	Code of Federal Regulations
CO	Carbon Monoxide
DOH	Hawaii State Department of Health
DOT	Hawaii State Department of Transportation
EPA	United States Environmental Protection Agency
FEM	Federal Equivalent Method
FRM	Federal Reference Method
H <sub>2</sub> S	Hydrogen Sulfide gas
IMPROVE	Integrated Monitoring of Protected Visual Environments
MSA	Metropolitan Statistical Area
MSL	Mean Sea Level
MWC	Municipal Waste Combustor
NAAQS	National Ambient Air Quality Standards
NCore	National Core Multi-pollutant Monitoring Stations
NEI	National Emissions Inventory
NO <sub>2</sub>	Nitrogen Dioxide
O <sub>3</sub>	Ozone
Pb	Lead
PM <sub>2.5</sub>	Particulate matter less than or equal to 2.5 microns in aerodynamic diameter
PM <sub>10</sub>	Particulate matter less than or equal to 10 microns in aerodynamic diameter
PQAO	Primary Quality Assurance Organization
PPM	Parts per million
PSD	Prevention of Significant Deterioration
PWEI	Population Weighted Emissions Index
SLAMS	State and Local Air Monitoring Stations
SO <sub>2</sub>	Sulfur dioxide
SPMS	Special Purpose Monitoring Stations
STN	Speciation Trends Network
TPY	Tons per Year
TSP	Total suspended particulates
VOG	Haze due to volcanic emissions
WD	Wind direction
WS	Wind speed
µg/m <sup>3</sup>	micrograms per cubic meter of air

## Introduction

The State of Hawaii Department of Health (DOH) plans, operates and maintains the statewide ambient air quality monitoring network. Monitoring data is used for a variety of reasons including determining compliance with National Ambient Air Quality Standards (NAAQS), timely reporting of the U.S. Environmental Protection Agency's (EPA) Air Quality Index (AQI), tracking and characterizing air quality trends, evaluating emission control strategies, and supporting health studies.

The DOH manages all of the State and Local Air Monitoring Stations (SLAMS), Special Purpose Monitoring Stations (SPMS), and the National Core Monitoring Station (NCORE). Additionally, Hawaii has two Interagency Monitoring of Protected Visual Environments stations (IMPROVE) located at Haleakala National Park on Maui and Volcanoes National Park on the island of Hawaii. The IMPROVE stations are operated and maintained by the National Park Service through their federal land management agency.

This annual review evaluates the state's existing ambient air monitoring network to determine adequacy in meeting monitoring objectives, optimizes the network by closing, moving or adding stations, and ensures that air quality issues important to the state are being addressed. The review ensures that the network is providing adequate, quality assured and useful data to meet the needs of stakeholders. This plan encompasses the 18-month period from July 1, 2012 through December 31, 2013, however, unplanned modifications may occur due to funding reductions, unanticipated site changes, or changes in EPA monitoring requirements. This plan is being submitted to the EPA Region IX according to the Code of Federal Regulations (CFR), Title 40, Part 58, Section 58.10.

Notification of the plan availability for public inspection was provided through public notices published on May 21, 2012 in the daily newspapers of all counties. The plan was available for review at all county District Health offices as well as on the Clean Air Branch website (<http://hawaii.gov/health/environmental/air/cab/index.html>) for 30 days from May 21, 2012 to June 21, 2012.

# 1.0 Network Purpose and Design

## 1.1 Overview

EPA established NAAQS for the following criteria pollutants: carbon dioxide (CO), lead (Pb), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), sulfur dioxide (SO<sub>2</sub>), particulate matter 10 microns or less in aerodynamic diameter (PM<sub>10</sub>), and particulate matter 2.5 microns or less in aerodynamic diameter (PM<sub>2.5</sub>). Additionally, there is a state standard for hydrogen sulfide (H<sub>2</sub>S) that was established primarily to monitor the ambient air effects of geothermal energy production activities on the island of Hawaii. In 2011 the state established the National Core multi-pollutant monitoring station (NCore) as required by 40 CFR 58. The NCore station monitors for PM<sub>2.5</sub>, speciated PM<sub>2.5</sub>, PM<sub>10-2.5</sub>, O<sub>3</sub>, SO<sub>2</sub>, CO, Pb, nitrogen oxides (NO/NO<sub>2</sub>/NO<sub>y</sub>) and the meteorological parameters wind speed, wind direction, ambient temperature and relative humidity. Hawaii's air quality surveillance network consists of compliance stations monitoring for criteria pollutants as well as the NCore station and several special purpose monitoring stations.

The annual review ensures that the state meets monitoring and siting requirements, the three basic monitoring objectives, addresses the six site types in 40 CFR 58 Appendix D, provides information for non-regulatory data goals and the requirements of 40 CFR 58 appendices A, C, D, and E as follows:

- *Appendix A: Quality Assurance Requirements for SLAMS, SPMSs and PSD Air Monitoring;*
- *Appendix C: Ambient Air Quality Monitoring Methodology*
- *Appendix D: Network Design Criteria for Ambient Air Quality Monitoring*
- *Appendix E: Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring*

### 1.1.1 SLAMS

SLAMS are established primarily to demonstrate compliance with the NAAQS and to meet minimum monitoring requirements as required in 40 CFR 58 Appendix D. All SLAMS must meet quality assurance, methodology, and siting requirements of 40 CFR 58 Appendix A, C and E respectively. All data is submitted to EPA's Air Quality System (AQS) within 90 days at the end of each calendar quarter, as required in 40 CFR 58.16.

EPA mandated that each state establish a minimum of one National Core multi-pollutant monitoring station to support tracking of long-term trends of criteria and non-criteria pollutants, model evaluation, long-term health and ecosystem assessments, and other scientific and technological studies. Hawaii's NCore station became fully operational on January 1, 2011. The SLAMS network excludes SPMS but includes NCore and other stations that have not been specifically designated as SPMS.

### 1.1.2 SPMS

SPMS are operated for specific areas of interest to the state and do not count in meeting minimum monitoring requirements. Hawaii's SPM network is established

primarily to monitor air quality impacts of emissions from the ongoing Kilauea volcano eruption; hydrogen sulfide (H<sub>2</sub>S) emissions from geothermal energy production; and impacts from cruise ships on the island of Kauai. The DOH utilizes FRM or FEM analyzers for all criteria SPMS, meets the quality assurance requirements of 40 CFR 58 Appendix A, and submits criteria pollutant data to AQS. All data from SPMS which have operated for more than 24 months is eligible for comparison to relevant NAAQS.

## **1.2 Network Design and Review Process**

The review determines if network modifications are needed to reduce or eliminate redundancy and low value monitoring; meet new NAAQS monitoring requirements or programs; determine if sufficient data is being collected using the best technology and schedule that resources allow; and if corrective actions to ensure compliance with all siting and quality assurance requirements are needed.

Modification decisions are made using a variety of tools including but not limited to: data trend analyses; performance and technical systems audits; regular site inspections; cost and value analyses; assessment of unfavorable site changes such as loss of lease or construction that adversely affect data collection; and, the need to address special studies or new regulatory as well as non-regulatory monitoring objectives.

### **1.2.1 Monitoring Objectives and Site Types**

Ambient air monitoring networks must be designed to meet three basic objectives as stated in 40 CFR 58 Appendix D:

- 1) Provide air pollution data to the general public in a timely manner;
- 2) Support compliance with NAAQS and emissions strategy development; and
- 3) Support air pollution research studies.

The state's ambient air monitoring network achieves all three objectives as follows:

- 1) Air pollution data from all SLAMS and SPMS are exhibited near real-time on the DOH public web-site, additionally continuous PM<sub>2.5</sub> and O<sub>3</sub> data is provided to EPA's AIRNow website for use in calculating the AQI;
- 2) Data from SLAMS are used to demonstrate compliance with the NAAQS and in development and tracking of emissions control strategies. Similarly, data from the state's NCore station will be used to track long-term trends of criteria and non-criteria pollutants as well as support emissions control strategies;
- 3) All SLAMS, SPMS, and NCore monitoring provide valuable information in support of air pollution, health, and other scientific studies.

In order for the network to support the three basic objectives outlined above, it must be designed with a variety of monitoring site types. The six general site types are:

- 1) Determine the highest pollutant concentrations expected in the network;
- 2) Measure typical concentrations in areas of high population density;
- 3) Determine the impact of significant sources or source categories on air quality;
- 4) Determine general background concentrations;
- 5) Determine the extent of regional pollutant transport between populated areas;

- 6) Measure pollution impacts on visibility, vegetation, crops, animals and buildings.

The site type for each station in the network is included in its detailed description in Section 3.0 of this document.

### **1.2.2 PM<sub>2.5</sub> Network Changes**

According to 40 CFR 58.10 (c), this network plan must document how the state will provide for a review of changes to a PM<sub>2.5</sub> monitoring network that impact the location of a violating PM<sub>2.5</sub> monitor or the creation or change to a community monitoring zone, including a description of the proposed use of spatial averaging for purposes of making comparisons to the annual PM<sub>2.5</sub> NAAQS as set forth in Part 50 Appendix N. The agency must also document the process for obtaining public comment and include any comments received through the public notification process within the submitted plan.

The state does not have, nor is intending to create any community monitoring zones and does not utilize spatial averaging for comparison to the PM<sub>2.5</sub> NAAQS. The state has in place a public notification procedure which includes posting notice in the newspapers of all counties and on the agency web site allowing for public viewing and comments of the changes that are in the annual network plan document.

## **1.3 Organizational Structure and Responsibilities**

The DOH Air Surveillance and Analysis Section (ASAS) serves as the Primary Quality Assurance Organization (PQAO), operating and maintaining the stations and providing quality assured data to AQS. The ASAS also provides laboratory support for chemical and mass analyses of special or research air toxics monitoring and PM<sub>2.5</sub> co-located filter samples.

The DOH Clean Air Branch (CAB) is the state agency responsible for planning, management, and regulatory activities associated with the state's air program. As an organizationally separate entity, the CAB conducts independent audits of the monitoring network and provides oversight of the PQAO.

## 2.0 Network Evaluation

There are minimum monitoring requirements for PM<sub>10</sub>, PM<sub>2.5</sub>, O<sub>3</sub>, SO<sub>2</sub>, and Pb for each MSA in the state as described in 40 CFR 58 Appendix D. The U.S. Census Bureau has designated Honolulu as the only MSA in the state with a 2010 census population of 953,207. There are five counties in the state: Kauai (islands of Niihau and Kauai); City & County of Honolulu (island of Oahu); Maui (islands of Maui, Molokai, Lanai, Kahoolawe), Kalawao (Kalaupapa Settlement on Molokai), and Hawaii (island of Hawaii).

### 2.1 PM<sub>10</sub> Network

The minimum number of required PM<sub>10</sub> monitoring stations for the MSA is dependent upon population and concentration measurements. High concentration areas are those for which the ambient PM<sub>10</sub> data show concentrations exceeding the PM<sub>10</sub> NAAQS by 20 percent or more. Medium concentration areas are those for which ambient PM<sub>10</sub> data show concentrations exceeding 80 percent of the NAAQS. Low concentration areas are those for which ambient PM<sub>10</sub> data show concentrations less than 80 percent of the NAAQS.

PM<sub>10</sub> data for 2009 to 2011 showed the MSA to be a low concentration area (Table 2-1) and therefore is required to have one to two PM<sub>10</sub> monitors (Table 2-2). The data provides a conservative measurement since it includes values due to the New Year's fireworks exceptional events. The state meets the minimum PM<sub>10</sub> monitoring requirements with three PM<sub>10</sub> stations in the MSA.

**Table 2-1. PM<sub>10</sub> Network and Concentrations for the MSA**

Site Name	AQS No.	Maximum 24-Hr Value 2009-2011 (µg/m <sup>3</sup> )	Percent of 24-Hr NAAQS	Sampling Frequency
Honolulu	150031001	63 (2010 fireworks)	42	Continuous
Kapolei	150030010	59 (2010)	39	Continuous
Pearl City	150032004	70 (2010 fireworks)	47	Continuous

**Table 2-2. PM<sub>10</sub> Minimum Monitoring Requirements for the MSA**

MSA Population Category (40 CFR 58 Appendix D Table D-4)		High Concentration ≥120% of NAAQS (≥180 µg/m <sup>3</sup> )	Medium Concentration >80% of NAAQS (>120 µg/m <sup>3</sup> )	Low Concentration <80% of NAAQS (<120 µg/m <sup>3</sup> )	
>1,000,000		6-10	4-8	2-4	
500,000-1,000,000		4-8	2-4	1-2	
250,000-500,000		3-4	1-2	0-1	
100,000-250,000		1-2	0-1	0	
MSA	2010 Census Population	Highest 24-hr Value 2009 – 2011	Required # of Monitors	# of Active Monitors in the MSA	# of Monitors Needed
Honolulu	953,207	70	1-2	3	0

Figure 2-1 shows the map locations of the currently operating PM<sub>10</sub> sites in the state. All of the PM<sub>10</sub> stations are in the Honolulu MSA.

Figure 2-1. PM<sub>10</sub> Network



## 2.2 PM<sub>2.5</sub> Network

The state must operate a minimum number of required PM<sub>2.5</sub> monitors based on population in the MSA and the most recent 3-year design value for PM<sub>2.5</sub>. The design value for the annual PM<sub>2.5</sub> standard is the most current 3-year average annual mean for each site. The design value for the 24-hour PM<sub>2.5</sub> standard is the most current 3-year average of annual 98<sup>th</sup> percentile 24-hour values recorded at each monitoring site. Table 2-3 shows the annual and daily design values for complete data years 2009 to 2011.

The most recent 3-year design values were less than 85% of any PM<sub>2.5</sub> NAAQS. Table 2-4 shows that the state operates more than the minimum monitoring requirements for PM<sub>2.5</sub> in the MSA. In addition to the four PM<sub>2.5</sub> sites in the Honolulu MSA, the state operates one SLAM station on the island of Maui, five SPMS on the island of Hawaii for volcanic emissions, and one SPM station on the island of Kauai to monitor cruise ship emissions. All primary PM<sub>2.5</sub> monitors are continuous FEM. Figure 2-2 shows the map locations of all the PM<sub>2.5</sub> stations in the state, including SPMS.

**Table 2-3. PM<sub>2.5</sub> Network and Concentrations for the MSA**

Site	AQS No.	Sampling Frequency	Annual Design Value 2009 – 2011	Percent of Annual NAAQS	Daily Design Value 2009-2011	Percent of 24-Hour NAAQS
Honolulu	150031001	Continuous	4.7	31	11.4	32
Kapolei	150030010	Continuous	5.0	33	12.3	35
Pearl City	150032004	Continuous	4.7	31	11.9	34
Sand Island	150031004	Continuous	8.5	56	16.5	47

**Table 2-4. PM<sub>2.5</sub> Minimum Monitoring Requirements for the MSA**

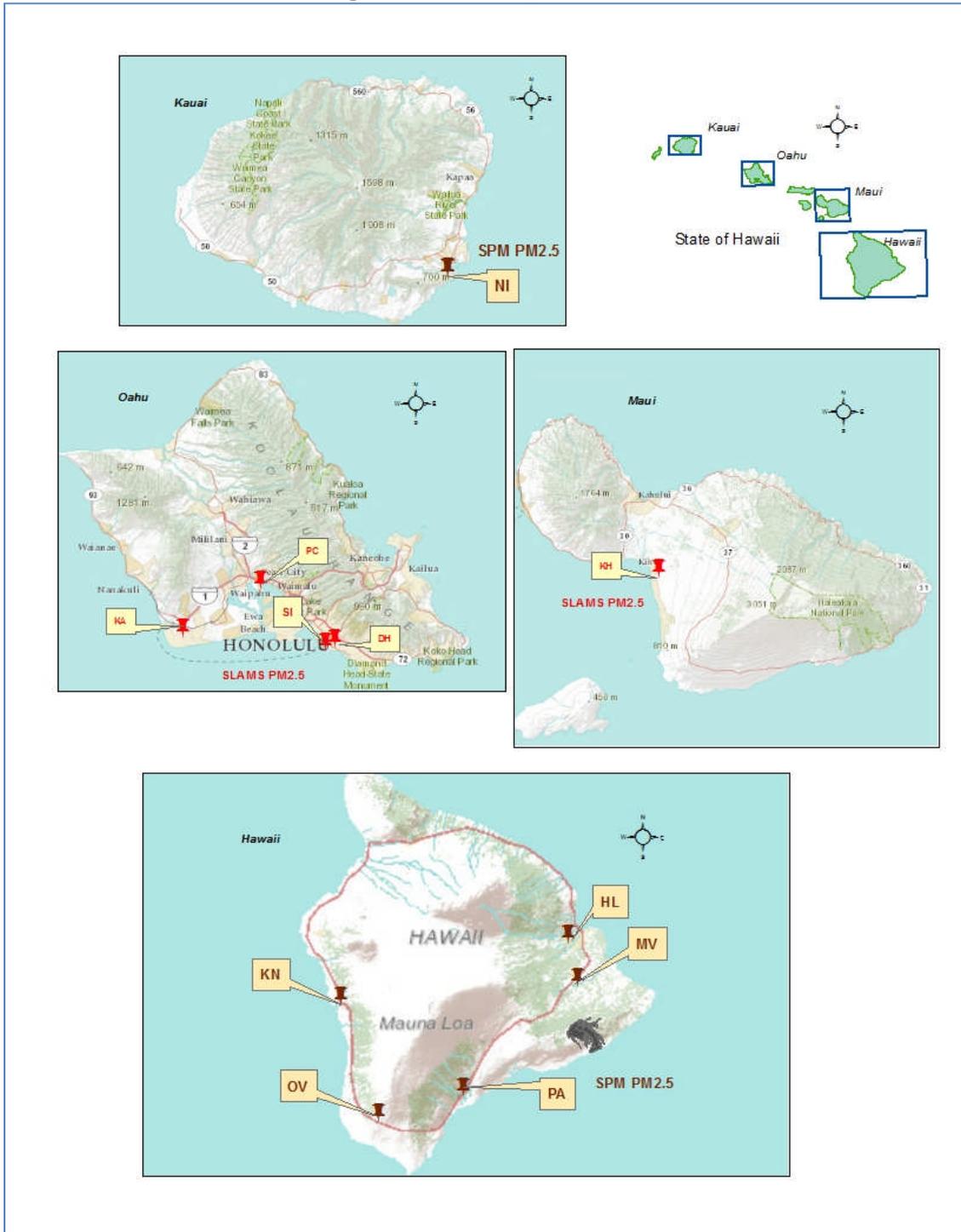
MSA Population Category (40 CFR 58 Appendix D Table D-5)		Most recent 3-year Design Value ≥85% of any PM <sub>2.5</sub> NAAQS (≥29.8 µg/m <sup>3</sup> for 24-hr standard; ≥12.8 µg/m <sup>3</sup> for annual standard)		Most recent 3-year Design Value <85% of any PM <sub>2.5</sub> NAAQS (<29.8 µg/m <sup>3</sup> for 24-hour standard; <12.8 µg/m <sup>3</sup> for annual standard)		
>1,000,000		3		2		
500,000-1,000,000		2		1		
250,000-500,000		1		0		
MSA	2010 Census Population	Highest Annual Design Value 2009 – 2011	Highest Daily Design Value 2009-2011	Required No. of Monitors	Number of Active Monitors in the MSA	Number of Monitors Needed
Honolulu	953,207	8.5	16.5	1	4	0

Appendix A to 40 CFR 58 requires that 15 percent of each PM<sub>2.5</sub> monitoring method be collocated. The state currently operates five SLAMS and six SPMS with plans to add an additional SPMS site on the island of Hawaii. With a total of 12 stations, two collocated monitors are required. One FRM collocated monitor is currently operating at the Kapolei station. The state plans to collocate a PM<sub>2.5</sub> FEM at the Kona station by the end of 2012. Table 2-5 summarizes the PM<sub>2.5</sub> collocated network.

**Table 2-5. PM<sub>2.5</sub> Collocated Network**

Method Code	# Primary Monitors	# Required Collocated	# Active Collocated FRM	# Active Collocated FEM (same method designation as primary)	# and Type of Collocated Required
170	11	2	1	0	1 FEM

**Figure 2-2. PM<sub>2.5</sub> Network**



### 2.3 O<sub>3</sub> Network

The state must operate a minimum number of O<sub>3</sub> monitors depending upon MSA population and typical peak concentrations. NCore sites are intended to complement O<sub>3</sub> data collection but can be used to meet the minimum monitoring requirements.

The O<sub>3</sub> monitoring season for the state of Hawaii is 12-months from January to December. The O<sub>3</sub> design value is the 3-year average of the fourth-highest daily maximum 8-hour concentrations measured at each monitor.

The most recent design value concentration showed less than 85% of the O<sub>3</sub> NAAQS (Table 2-6) and therefore, as shown in Table 2-7, the state meets the minimum O<sub>3</sub> network monitoring requirements.

**Table 2-6. O<sub>3</sub> Design Values for the MSA**

Stations in the MSA	8-Hour Design Value 2009 – 2011	2010 MSA Census Population	Required # of Monitors	# of Active Monitors in the MSA	# of Monitors Needed
Honolulu (150031001)	0.048	953,207	1	2	0
Kapolei <sup>1</sup> (150030010)	0.050				

<sup>1</sup> Kapolei NCore O<sub>3</sub> began operating January 2011

**Table 2-7. O<sub>3</sub> Minimum Monitoring Requirements for the MSA**

MSA Population Category (40 CFR 58 Appendix D Table D-2)	Most recent 3-year design value ≥85% of any O <sub>3</sub> NAAQS (≥0.064 ppm, 8-hr standard)	Most recent 3-year design value <85% of any O <sub>3</sub> NAAQS (<0.064 ppm, 8-hr standard)
>10 million	4	2
4-10 million	3	1
350,000-<4 million	2	1
50,000-<350,000	1	0

Figure 2-3 shows the map locations of the SLAM and NCore O<sub>3</sub> stations. Both stations are located in the Honolulu MSA.

Figure 2-3. O<sub>3</sub> Network



## 2.4 Pb Network

With a 2010 census population of 953, 207 in the Honolulu MSA, the state is required to conduct non-source-oriented Pb monitoring at the Kapolei NCore site (Table 2-8). This NCore site began collecting Pb data on January 1, 2012. Figure 2-4 shows the location of the Pb monitoring site at the Kapolei NCore station.

Appendix D to Part 58 also requires source-oriented Pb monitoring for sources emitting 0.50 or more tons per year (TPY) according to the most recent emissions inventory. There are no sources in the state emitting 0.5 or more TPY of Pb.

**Table 2-8. Minimum Pb Monitoring Requirement at NCore**

NCore	AQS ID	CBSA	2010 Census Population	# Required Monitors	# Active Monitors	# Monitors Needed
KA	150030010	Honolulu	953,207	1	1	0

**Figure 2-4. Pb Monitoring Station**



## 2.5 CO Network

There are no minimum requirements for CO monitoring, however the state currently operates two SLAMS CO monitors in the Honolulu MSA and one SPM station on the island of Kauai. Figure 2-5 shows the locations of the CO sites in the state.

Figure 2-5. CO Network



## 2.6 NO<sub>2</sub> Network

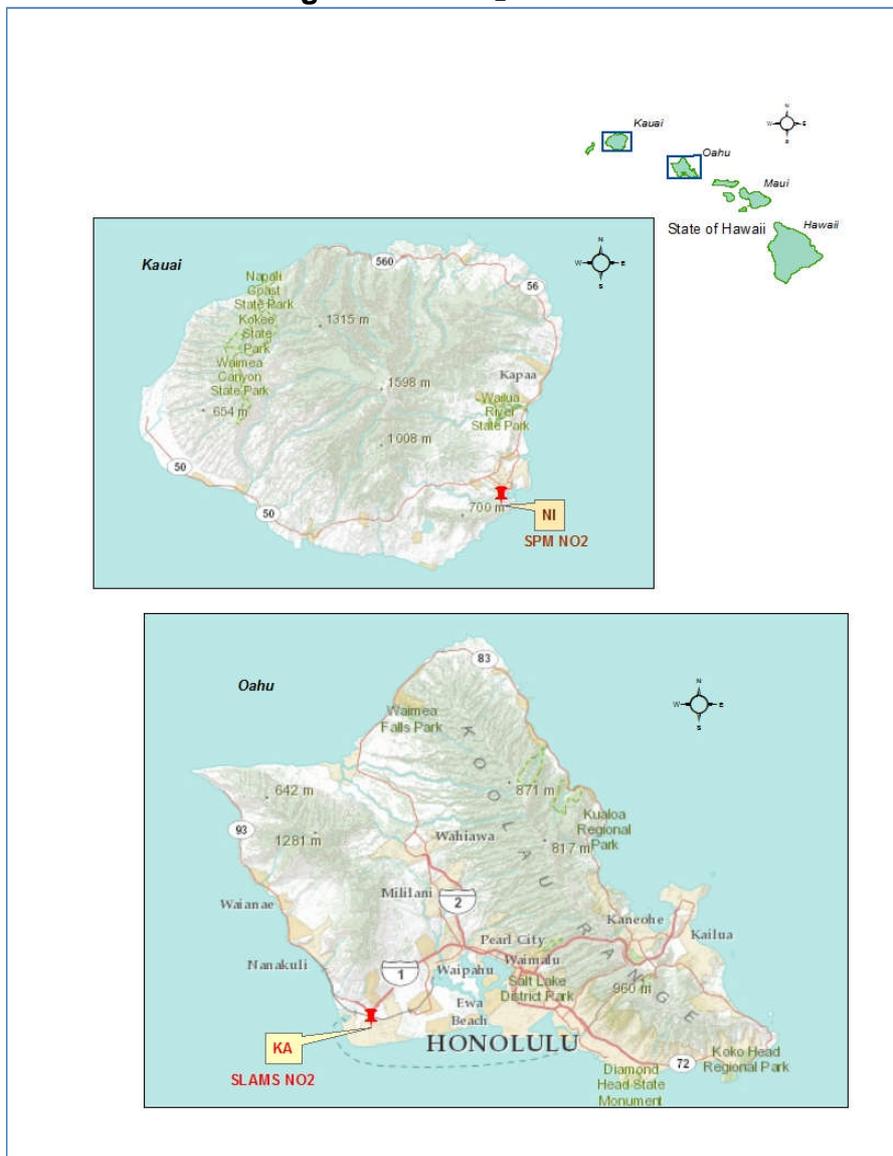
The state is required by 40 CFR 58 Appendix D to install and operate one microscale near-road NO<sub>2</sub> monitoring station to be operational by January 1, 2013 (Table 2-9). See Section 2.12 for details of the proposed near-road NO<sub>2</sub> monitoring station.

Other than the new requirements for near-road and area-wide monitoring for Core-Based Statistical Areas (CBSA) with a population of 1,000,000 or more persons there are no other minimum NO<sub>2</sub> monitoring requirements. Currently, there is one SLAM and one SPM NO<sub>2</sub> monitoring stations. Figure 2-6 shows the locations of the NO<sub>2</sub> stations.

**Table 2-9. Minimum NO<sub>2</sub> Near-Road Monitoring Requirements**

CBSA	2010 Census Population	Maximum AADT in the CBSA	# Required Monitors	# Area-Wide Required Monitors
Honolulu	953,207	236,000	1	0

**Figure 2-6. NO<sub>2</sub> Network**



## 2.7 SO<sub>2</sub> Network

EPA has established the Population Weighted Emissions Index (PWEI) to determine required SO<sub>2</sub> monitoring. The PWEI is calculated by multiplying the population of each CBSA with the total amount of SO<sub>2</sub> in TPY emitted within the CBSA area and dividing the result by one million. According to this calculation, Hawaii is required to operate one SO<sub>2</sub> in the Honolulu area (Table 2-10). The state currently operates two SLAMS SO<sub>2</sub> monitors in the Honolulu MSA, and one at the NCore station in Kapolei and therefore meets the minimum number of required SO<sub>2</sub> stations. Figure 2-7 shows the locations of the SLAMS and SPMS SO<sub>2</sub> sites.

SO<sub>2</sub> continues to be one of the pollutants of concern in communities on the island of Hawaii with the ongoing eruption of the Kilauea volcano. There are six stations monitoring for volcanic emissions with plans to add one more station on the northwest side of the island. Three of the six SO<sub>2</sub> monitoring stations are SPMS that use FEM and follow all the requirements of 40 CFR 58 Appendices A, D, and E, have been operating for more than 24 months and therefore are subject to NAAQS comparison. One of the six stations was established primarily to monitor H<sub>2</sub>S emissions from geothermal energy production, the probe siting does not meet Appendix E and therefore is a non-regulatory SO<sub>2</sub> monitoring site.

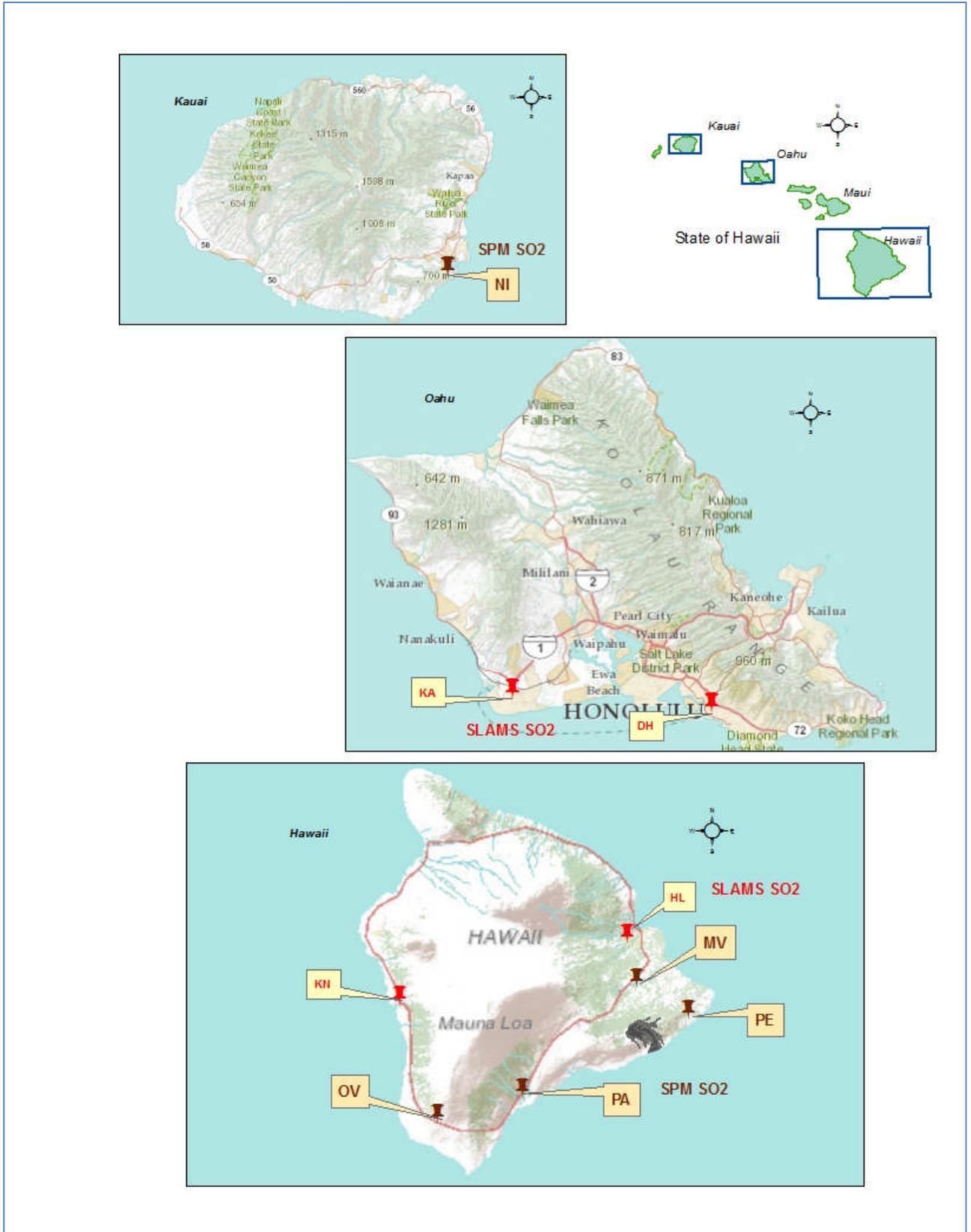
The state also began monitoring for cruise ship emissions on the island of Kauai. This is a SPM station which includes monitoring for SO<sub>2</sub>.

**Table 2-10. Minimum SO<sub>2</sub> Monitoring Requirements**

CBSA	County	2010 Census Population	Total SO <sub>2</sub> (tons/year) 2008 NEI	PWEI <sup>1</sup>	# Required Monitors	# Active Monitors	# Monitors Needed
Honolulu	City & County of Honolulu	953,207	21,082	20,096	1	2	0

<sup>1</sup> According to 40 CFR 58 Appendix D, if the PWEI for a CBSA is ≥ 5,000 but < 100,000, a minimum of one SO<sub>2</sub> monitor is required.

Figure 2-7. SO<sub>2</sub> Network



## 2.8 NCore

The Kapolei NCore station is located in the rapidly-growing residential, commercial, and industrial community on the southwest side of Oahu. Kapolei is considered to be the “second city” next to Honolulu with county, state and federal agencies also establishing offices in the area. The NCore parameters are: NO/NO<sub>y</sub>, SO<sub>2</sub>, CO, O<sub>3</sub>, PM<sub>10-2.5</sub>, PM<sub>2.5</sub> speciation, Pb and the meteorological parameters wind speed, wind direction, temperature and relative humidity.

The NCore station became fully operational in January 1, 2011.

## 2.9 H<sub>2</sub>S Network

The state has a one-hour H<sub>2</sub>S standard of 25 ppb established primarily to determine the effects of geothermal energy exploration and production on the island of Hawaii. Puna Geothermal Ventures (PGV) is a 41 MW geothermal power plant located in the lower east rift zone of the Kilauea volcano.

Although PGV is required by their non-covered source permit to maintain three air monitoring stations for H<sub>2</sub>S, the state established a monitoring station in the downwind community of Leilani Estates to monitor ambient effects of geothermal exploration and operations. The station monitors for H<sub>2</sub>S as well as SO<sub>2</sub>.

## 2.10 Network Summary

Table 2-11 summarizes the state’s 2012 air monitoring network. Sections 2.11 to 2.13 detail station closures, additions and equipment modifications.

**Table 2-11. Number of Stations by Pollutant or Program**

Pollutant/ Program	SLAMS	SPMS	NCore	Total in MSA	Total in State	Meets EPA Minimum Required?	Planned Additions	Planned Closures
CO	2	1	1	3	4	Not applicable	0	0
NO <sub>2</sub>	1	1	*1 *NO/NO <sub>y</sub>	1	2	YES	1 SLAMS	0
SO <sub>2</sub>	4	5	1	3	10	YES	1 SPMS	0
O <sub>3</sub>	1	0	1	2	2	YES	0	0
PM <sub>10</sub>	3	0	---	3	3	YES	0	0
PM <sub>2.5</sub>	5	6	---	4	11	YES	1 SPMS/ 1 FEM collocated	0
Pb	0	0	1	1	1	YES	0	0
PM <sub>2.5</sub> Speciation	0	0	1	1	1	YES	0	0
PM <sub>10-2.5</sub>	---	---	1	1	1	YES	0	0
H <sub>2</sub> S	0	1	---	0	1	Not applicable	0	0

## 2.11 Site Closures

There are no planned or anticipated station closures in the next 18 months.

## 2.12 Site Additions

This section describes planned station or monitor additions in the next 18 months.

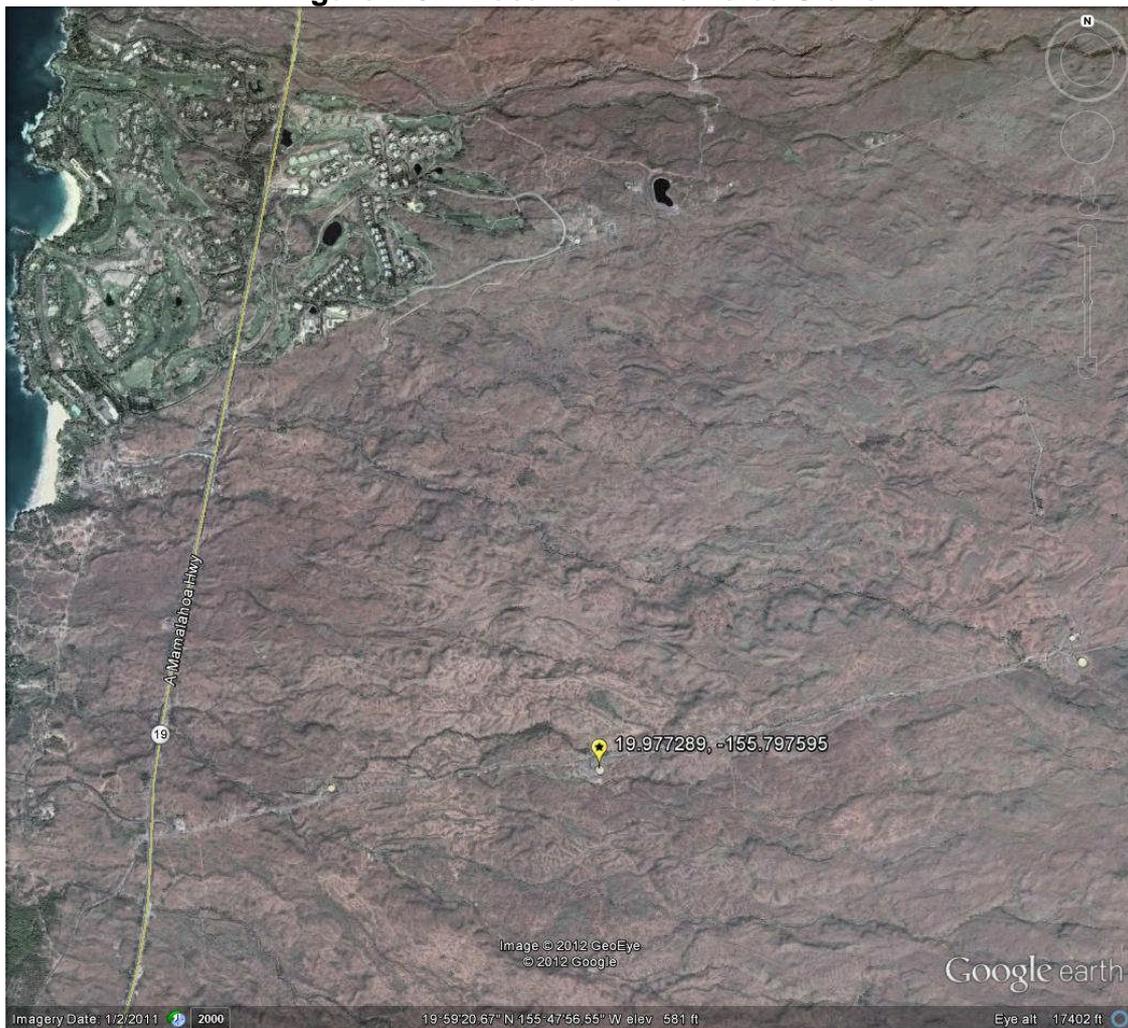
### Waikoloa (island of Hawaii) - SPM

Approximate location: 19.977289° Lat. / -155.797595° Long.

Parameters: SO<sub>2</sub>, PM<sub>2.5</sub>

This planned new station will be in Waikoloa on the northwestern side of the island. The selected site is approximately 3 kilometers northeast of the residential and commercial community of Waikoloa Village. Although there are several stations monitoring volcanic emissions during prevailing wind conditions, there are no stations to monitor the impact on the northern side of the island when the winds shift from northeasterly trade-winds to the south/southeasterly direction. Wind direction shifts which generally occur during the winter months will often bring the vog, or volcanic haze up the island chain. Although SO<sub>2</sub> is not expected to be elevated in this community, initially, both PM<sub>2.5</sub> and SO<sub>2</sub> will be monitored.

**Figure 2-8. Location of Waikoloa Station**



## NO<sub>2</sub> Near-Road Monitoring

On February 9, 2010, the EPA revised the NO<sub>2</sub> NAAQS to include a 1-hour standard. The revision also included new requirements for near-road monitoring at locations where peak hourly NO<sub>2</sub> concentrations are expected to occur. States are required to consider traffic volumes, fleet mix, roadway design, congestion, terrain and meteorology in determining where to place a near-road NO<sub>2</sub> monitor.

40 CFR 58 Appendix D, Section 4.3.2(a) requires that there must be one microscale near-road NO<sub>2</sub> monitoring station in each Core Based Statistical Area (CBSA) with a population of 500,000 or more persons. In the 2010 U.S. Census, the Honolulu CBSA had a population of 953,207, requiring the state to establish one near-road monitoring station. Additional near-road monitoring is also required if the CBSA has any roadway segment with 250,000 or more annual average daily traffic (AADT) count. The latest AADT counts provided by the state Department of Transportation did not show any road segment with volumes of 250,000 or more therefore additional near-road monitoring is not required.

The following information and procedures were used in prioritizing the candidate road segments for the near road monitoring:

- AADT counts provided by the state Department of Transportation (DOT);
- Reconnaissance;
- Roadway design;
- Terrain;
- Upwind, downwind siting;
- Roadside structures or obstructions;
- Existing infrastructure;
- Location of any near-by sources of NO<sub>2</sub>;
- Available space and property owner;
- Access, security and safety;
- Population; and,
- Local knowledge of confounding or unique influences

The DOT did not have specific fleet mix or congestion data available. Fleet mix and congestion were therefore determined by other means such as travel activity by vehicle type and functional class and by using local knowledge.

Of the six road segments with the highest AADT counts, three were eliminated due to factors such as elevation, major obstructions, restricted access, low population base or other highly undesirable factors. Table 2-12 lists the comparison matrix used to rank the top two road segments as candidates for near-road monitoring.

The area ranked first will be pursued as the preferred monitoring station location. Since there are many factors involved in procuring the site, such as landowner permission, lease agreement and/or fee negotiations, security, and utility access, if the priority site is deemed unattainable, the state will proceed to the second choice.

**Table 2-12. NO<sub>2</sub> Near-Road Candidate Sites: Description and Rank**

ID	AADT <sup>1</sup>	Road Type	Surrounding Land Use	Site Summary	RANK
H1PC	236,000 <sup>2</sup>	Controlled Access Freeway	Residential, commercial, school, golf course, park	Max AADT High congestion am/pm Downwind Larger population base is upwind To date, unable to secure approval for the station	2
H1Kapalama	201,606	Controlled Access Freeway	Residential, commercial	Undesirable site: >20 ft. above grade Bridge Space and safety issues	4
H1Kalihi	159,000 <sup>2</sup>	Controlled Access Freeway	Business, residential, commercial, school	>15 ft. retaining wall, upwind Widening project scheduled for 2011-2020 Possible safety and security issues	3
Moanalua	139,118	Limited Access Road	Commercial, light industrial, park	Undesirable site: Below grade Low population base Bridge	5
H1Punahou <sup>3</sup>	135,000 <sup>2</sup>	Controlled Access Freeway	Hospitals, residential, schools, retirement condominium, church	High congestion throughout the day Downwind High population base, including sensitive populations (children and elderly) Selected site at grade Secured with utility access	1
H1Halawa	122,359	Controlled Access Freeway	Stadium, residential, open land	Undesirable site: Bridge Low population base	6

<sup>1</sup> AADT provided by the State of Hawaii Department of Transportation

<sup>2</sup> Approximated 2010 counts, other counts are from 2009.

<sup>3</sup> This count was taken approximately 1 mile past the Punahou off-ramp. Traffic counts probably higher at the off-ramp

### Primary Site Selection

Road ID: H1Punahou

Identifiable Name: H1-E Punahou Off

2010 AADT: ~135,000

#### Brief Description:

H1 Interstate, east-bound at the Punahou off-ramp is a major ingress to Waikiki and the heavily populated Manoa/McCully area. On the opposite side is the Alexander Street on-ramp to the H1 west-bound. Residents in this area have long complained of fumes, pollution and soot from car/truck exhaust on this very congested stretch of the freeway.

The selected location, on the grounds of Shriners' Hospital, is approximately 15 meters downwind from the edge of the H1-east freeway. The immediate area contains two hospitals (Shriners' Hospital for Children and Kapiolani Medical Center for Women and Children), an elderly retirement condominium, several schools, a church, and residential communities. Approval for installing the station has been obtained from Shriners' Hospital with nearby utility hook-ups available.

**Figure 2-9 H1 Punahou Large Scale View**



**Figure 2-10 H1 Punahou at Shriner's Hospital**



**Figure 2-11 H1 Punahou Off-Ramp**





**Figure 2-13 H1/Kaonohi Close-Up View**



**2.13 Modifications**

**PM<sub>2.5</sub> collocated FEM monitor**

Planned: Kona, Hawaii station (150011012)

The state’s largest pollutant network is PM<sub>2.5</sub> with five SLAMS and six SPMS stations. According to the quality assurance requirements of 40 CFR Appendix A, 15% of the PM<sub>2.5</sub> monitors should be collocated. With all of the 11 PM<sub>2.5</sub> monitors being continuous FEM BAMS 1020, one collocated FRM and one collocated FEM are required. The collocated FRM monitor is located at the Kapolei SLAMS station. To meet the minimum collocation requirements, DOH plans to add one FEM collocated monitor at the Kona station. Kona consistently records some of the highest PM<sub>2.5</sub> values in the state due to volcanic emissions.

**2.14 Summary of Network Changes**

**Table 2-13. Summary of Network Changes**

Site	AQS ID	Site Type	Affected Parameters	Reason for Closure/Addition/Modification
<b>HONOLULU MSA (island of Oahu)</b>				
TBD	TBD	SLAMS	NO <sub>2</sub>	Required near-road monitoring station to be operational by January 1, 2013
<b>Hawaii County (island of Hawaii)</b>				
Kona	150011012	SPMS	PM <sub>2.5</sub> collocated FEM	To meet minimum collated requirements, FEM to start in 2012
Waikoloa	TBD	SPMS	PM <sub>2.5</sub> , SO <sub>2</sub>	New station to be established for volcanic emissions monitoring on NW side of island by end of 2012

### 3.0 Detailed Site Descriptions

Following are descriptions and photos of each station in the state's current ambient air monitoring network. The descriptions include area location, traffic, probe siting, monitor information and adherence to quality assurance.

The ASAS is the collecting and reporting agency for all stations and monitors operating in the state.

**Table 3-1. State of Hawaii Ambient Air Monitoring Network**

ID	AQS No.	Site Name	Basic Monitoring Objective(s) <sup>1</sup>	Parameters
DH	150031001	Honolulu	1, 2	PM <sub>2.5</sub> , PM <sub>10</sub> , SO <sub>2</sub>
KA SLAMS	150030010	Kapolei	1,2	PM <sub>2.5</sub> , PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>2</sub> , CO
KA NCore	150030010	Kapolei	1,3	PM <sub>10-2.5</sub> , SO <sub>2</sub> , NO/NO <sub>y</sub> , CO, O <sub>3</sub> , Pb, PM <sub>2.5</sub> speciation WS, WD, RH, Temp
PC	150032004	Pearl City	1,2	PM <sub>2.5</sub> , PM <sub>10</sub>
SI	150031004	Sand Island	1,2	PM <sub>2.5</sub> , O <sub>3</sub>
KH	150090006	Kihei	1,2	PM <sub>2.5</sub>
NI	150070007	Niimalu	1,3	PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>2</sub> , CO
HL SLAMS	150011006	Hilo	1,2,3	SO <sub>2</sub>
HL SPMS	150011006	Hilo	1,3	PM <sub>2.5</sub>
KN SLAMS	150011012	Kona	1,2,3	SO <sub>2</sub>
KN SPMS	150011012	Kona	1,3	PM <sub>2.5</sub>
MV	150012023	Mt. View	1,3	PM <sub>2.5</sub> , SO <sub>2</sub>
OV	150012020	Ocean View	1,3	PM <sub>2.5</sub> , SO <sub>2</sub>
PA	150012016	Pahala	1,3	PM <sub>2.5</sub> , SO <sub>2</sub>
PE	150012010	Puna E	1	SO <sub>2</sub> , H <sub>2</sub> S

<sup>1</sup> Basic Monitoring Objectives:

- 1) Public information
- 2) NAAQS compliance
- 3) Support research

<b>(DH) HONOLULU</b>			
AQS: 150031001	Type: SLAMS	County: Honolulu	MSA: Honolulu
Address: 1250 Punchbowl St., Honolulu, HI 96813			
Latitude: 21.30758	Longitude: -157.85542		Elevation: 20 m MSL
<b>Location Description:</b> This station is located on the roof of the state Department of Health building in downtown Honolulu. The surrounding streets are busy thoroughfares serving the downtown area. The area includes a major hospital (Queen's Medical Center), the state capitol, other state, county, commercial and business buildings as well as residential condominiums. This station has been operating since 1972.			



<b>TRAFFIC DESCRIPTION</b>				
Type of Roadway	Punchbowl	S. Beretania	Vineyard	H-1
Freeway				X
Major Street or Highway	X	X	X	
Distance from air intake (m)	30	122	610	914
Direction from air inlet	E	S	N	N/NE
Composition of roadway	asphalt	asphalt	asphalt	asphalt
Number of traffic lanes	5	6	6	6
Average daily traffic	35,844 <sup>1</sup>	53,046 <sup>1</sup>	48,445 <sup>1</sup>	No data
Average vehicle speed (est. mph)	20	25	25	45
Traffic one way or two	2	1	2	2
Street parking?	No	No	No	No

<sup>1</sup> Source: State of Hawaii, Department of Transportation 2006 traffic count

<b>Meteorology: WS, WD sensors attached to pole at rooftop</b>						
<b>DH MONITOR INFORMATION</b>						
	PM <sub>2.5</sub>	PM <sub>10</sub>	SO <sub>2</sub>	CO	WS	WD
POC/FRM/FEM	3/FEM	1/FEM	6/FEM	1/FRM	Info only	Info only
Parameter Code	88101	81102	42401	42101	---	---
Manufacturer	Met-One	Met-One	TECO	TECO	RM Young	RM Young
Model No.	BAM 1020	BAM 1020	43i	48	05103VP	05103VP
AQS Method Code (NE if not entered)	170	122	060	054	NE	NE
Monitoring start date	4/1/2009	7/1/2009	10/16/1992	1/1/1972	11/2003	11/2003
Frequency	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Probe material	--	--	Glass	Glass	--	--
Residence Time (sec)	--	--	12.48	12.48	--	--
Distance between co-located monitors (N/A if not applicable)	N/A	N/A	N/A	N/A	N/A	N/A

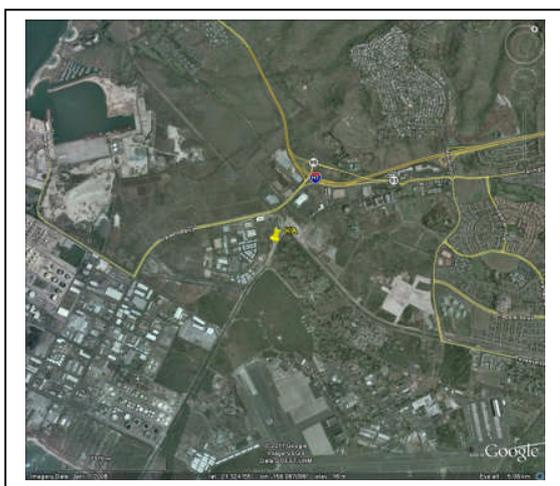
**DH Honolulu continued**

<b>PROBE SITING</b>			
	<b>GASES (CO, SO<sub>2</sub>)</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>
Location of probe	Top of building	Top of building	Top of building
Building dimensions			
Height (m)	12	12	12
Width (m)	61	61	61
Depth (m)	15	15	15
Horizontal distance from supporting structure (m)	9	8	8
Vertical distance above supporting structure (m)	1.2	1.8	1.8
Height of probe above ground (m)	13.2	13.8	13.8
Distance (m) & direction from tree(s)	27 E	24 E	24 E
Horizontal distance from edge of nearest traffic lane (m)	23	20	20
Horizontal distance from nearest parking lot (m)	24	24	24
Horizontal distance from walls, parapets, penthouses (m)	9	11	9
Distance & direction from nearest possible obstacle(s)	9 N	9 N	9 N
Distance & direction from furnace or incineration flues (m)	238 S/SW	234 S/SW	234 S/SW
Unrestricted airflow	360°	360°	360°
Located in paved or vegetative ground?	Paved	Paved	Paved

<b>SITE REPRESENTATIVENESS</b>				
	<b>CO</b>	<b>SO<sub>2</sub></b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>
Spatial scale	Middle	Neighborhood	Neighborhood	Neighborhood
Applicable NAAQS averaging times	1-hr; 8-hr	1-hr; 3-hr; 24-hr, Annual	24-hr; Annual	24-hr; Annual
Sampling season	12-months	12-months	12-months	12-months
Site type	Maximum	Population	Population	Population

<b>DATA QUALITY</b>		
	<b>Date or Frequency</b>	<b>Result</b>
Last PEP	3/20/11	Did not receive results from EPA
Last NPAP	12/16/10	Passed
Last annual independent performance audit (CAB)	5/25/11 and 11/2/11	Passed. Gas audit performed 5/25/11, PM and met audits performed 11/2/11
Flow rate audit frequency:	Monthly	
Precision & Accuracy submitted to AQS:	Quarterly	
Frequency of 1-pt. QC check for gases:	Weekly	
Frequency of multipoint gas calibration:	60 days	
Annual data certification submitted:	Annually by 5/1	submitted 5/1/12
<b>REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes</b>		
Changes planned in the next 18 months:	None	

<b>(KA) KAPOLEI SLAMS</b>			
AQS: 150030010	Type: SLAMS	County: Honolulu	MSA: Honolulu
Address: 2052 Lauwiliwili St., Kapolei, HI 96707			
Latitude: 21.32374	Longitude: -158.08861	Elevation: 17.9 m MSL	
<b>Location Description:</b> Located in the Kapolei Business Park, in the rapidly growing “second city” of Kapolei, the area is a mix of business, commercial, and government activities surrounded by an ever expanding residential community. The site is also approximately 1.25 km northeast (upwind) of the state’s largest industrial park on the southwest coast of the island of Oahu. The station has been operating since 2002.			



<b>TRAFFIC DESCRIPTION</b>			
<b>Type of Roadway</b>	Kalaeloa Blvd.	Lauwiliwili St.	H-1 Freeway
Freeway			X
Major Street or Highway	X		
Local Street or Road		X	
Distance from air intake (m)	379	167	686
Direction from air inlet	NW	W	N
Composition of roadway	asphalt	asphalt	asphalt
Number of traffic lanes	4	2	6
Average daily traffic	18,255 <sup>1</sup>	No data	No data
Average vehicle speed (est. mph)	35	30	55
Traffic one way or two	2	2	2
Street parking?	No	Yes	No

<sup>1</sup> Source: State of Hawaii Department of Transportation

<b>KA SLAMS Monitor Information</b>						
	<b>PM<sub>2.5</sub></b>	<b>PM<sub>2.5</sub> co-loc</b>	<b>PM<sub>10</sub></b>	<b>CO</b>	<b>SO<sub>2</sub></b>	<b>NO<sub>2</sub></b>
POC/FRM/FEM	1/FEM	2/FRM	3/FEM	1/FRM	1/FEM	1/FRM
Parameter Code	88101	88101	81102	42101	42401	42602
Manufacturer	Met One	Andersen	Met One	TECO	TECO	TECO
Model No.	BAM1020	RAAS2.5	BAM1020	48i	43A	42C
AQS Method Code	170	120	122	054	060	074
Monitoring start date	1/1/2009	1/1/2011	12/18/2008	7/29/2002	7/29/2002	7/29/2002
Frequency	Continuous	1/3	Continuous	Continuous	Continuous	Continuous
Probe material	--	--	--	Glass	Glass	Glass
Residence Time (sec)	--	--	--	13.22	13.22	13.22
Distance between co-located monitors	4 m	4 m	--	--	--	--
Analytical Laboratory	NA	ASAS	NA	NA	NA	NA

**KA Kapolei continued**

<b>PROBE SITING</b>			
<b>(N/A = Not applicable)</b>	<b>GASES (CO, SO<sub>2</sub>, NO<sub>2</sub>)</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>
Location of probe	Top of trailer shelter	Top of trailer shelter	Top of trailer shelter
Shelter dimensions			
Height (m)	4	4	4
Width (m)	2.4	2.4	2.4
Depth (m)	5	5	5
Horizontal distance from supporting structure (m)	N/A	N/A	N/A
Vertical distance above supporting structure (m)	1.1	1	1
Height of probe above ground (m)	5.1	5	5
Distance (m) & direction from tree(s)	19 N	17 N	17 N
Horizontal distance from edge of nearest traffic lane (m)	167	167	167
Horizontal distance from nearest parking lot (m)	87	87	87
Horizontal distance from walls, parapets, penthouses (m)	N/A	N/A	N/A
Distance & direction from nearest possible obstacle (m)	170 W	170 W	170 W
Distance & direction from furnace or incineration flues (m)	N/A	N/A	N/A
Unrestricted airflow	360°	360°	360°
Located in paved or vegetative ground?	Vegetative	Vegetative	Vegetative

<b>SITE REPRESENTATIVENESS</b>					
	<b>CO</b>	<b>SO<sub>2</sub></b>	<b>NO<sub>2</sub></b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Applicable NAAQS averaging times	1-hr; 8-hr	1-hr; 3-hr-24-hr; Annual	1-hr; Annual	24-hr; Annual	24-hr
Sampling season	12 months	12 months	12 months	12 months	12 months
Site type	Population	Population	Population	Population	Population

<b>DATA QUALITY</b>		
	<b>Date or Frequency</b>	<b>Result</b>
Last PEP	3/17/10	Did not receive results from EPA
Last NPAP	12/15/10	Passed
Last annual independent performance audit (CAB)	5/23/11 and 12/3/11	Passed. Gas audit performed 5/23/11, PM and met audits performed 12/3/11
Flow audit frequency:	Monthly	
PM FRM calibrations:	6 months	
Precision & Accuracy submitted to AQS:	Quarterly	
Frequency of 1-pt. QC check for gases:	Weekly	
Frequency of multipoint gas calibration:	60 days	
Annual data certification submitted:	Annually by 5/1	Submitted 5/1/12
<b>REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes</b>		
Changes planned in the next 18 months:	None	

KAPOLEI NCore			
AQS: 150030010	Type: NCore	County: Honolulu	MSA: Honolulu
Address: 2052 Lauwiliwili St., Kapolei, HI 96707			
Latitude: 21.32374	Longitude: -158.08861	Elevation: 17.9 m MSL	



NCore Pollutant Monitor Information							
<b>NOTE:</b> <sup>1</sup> The SLAMS PM <sub>2.5</sub> and PM <sub>10</sub> monitors are used to calculate the NCore parameter PM <sub>10-2.5</sub>							
<sup>2</sup> TBD: analysis method for TSP-Pb to be determined							
	CO	SO <sub>2</sub>	NO/NO <sub>y</sub>	O <sub>3</sub>	TSP-Pb	<sup>1</sup> PM <sub>10-2.5</sub>	PM <sub>2.5</sub> speciation
POC/FRM/FEM	2/FRM	2/FEM	1/FRM	1/FRM	1/FRM	See SLAMS	---
Parameter Code	42101	42401	42601	44201	TBD	---	---
Manufacturer	API	API	Ecotech	Ecotech	Graseby	MetOne	Met-One URG
Model No.	M300EU	M100EU	9843	Serinus 10	2376105	BAM 1020	SASS/300N
AQS Method Code	593	600	591	187	<sup>2</sup> TBD	185	810/136
Monitoring start date	1/1/2011	1/1/2011	1/1/2011	1/1/2011	1/1/2012	1/1/2011	10/1/2009
Frequency	Continuous	Continuous	Continuous	Continuous	1/6	Continuous	1/3
Probe material	Glass	Glass	Glass	Glass			
Residence Time (sec)	14.60	14.60	14.60	14.60			
Analytical Lab	NA	NA	NA	NA	ASAS	NA	EPA contract Lab

NCore Meteorological Parameters				
	RH	WS	WD	AT
POC	1	1	1	1
Parameter Code	62201	61103	61104	62101
Manufacturer	RM Young	RM Young	RM Young	RM Young
Model No.	05103VP	5103VP	5103VP	41342VC
AQS Method Code	014	020	020	020
Monitoring start date	1/1/2011	7/29/2002	7/29/2002	7/29/2002
Frequency	Continuous	Continuous	Continuous	Continuous

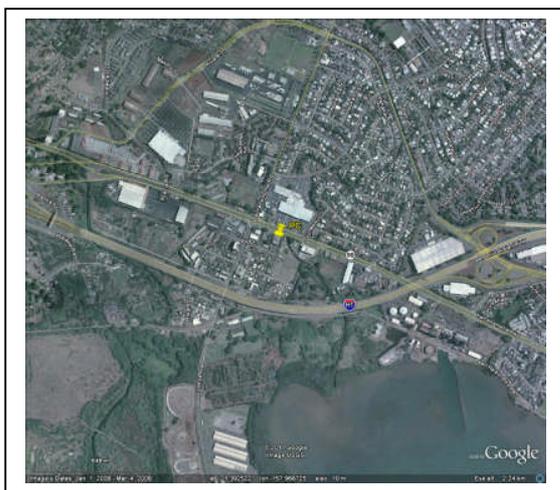
**KA Kapolei NCore continued**

<b>PROBE SITING</b>			
<b>(N/A = Not applicable)</b>	<b>GASES (CO, SO<sub>2</sub>, NO<sub>x</sub>, O<sub>3</sub>)</b>	<b>PM<sub>2.5</sub> speciation</b>	
Location of probe	Top of shelter	Top of shelter	
Building dimensions		<b>SASS</b>	<b>URG</b>
Height (m)	4	4	4
Width (m)	2.4	2.4	2.4
Depth (m)	5	5	5
Horizontal distance from supporting structure (m)	N/A	N/A	N/A
Vertical distance above supporting structure (m)	1	1.7	1.6
Height of probe above ground (m)	5	5.7	5.6
Distance (m) & direction from tree(s)	12 SE	13 SE	11 SE
Horizontal distance from edge of nearest traffic lane (m)	165	165	165
Horizontal distance from nearest parking lot (m)	85	85	85
Horizontal distance from walls, parapets, penthouses (m)	N/A	N/A	N/A
Distance & direction from nearest possible obstacle (m)	168 W	168 W	168 W
Distance & direction from furnace or incineration flues (m)	N/A	N/A	N/A
Unrestricted airflow	360°	360°	360°
Located in paved or vegetative ground?	vegetative	vegetative	vegetative

<b>SITE REPRESENTATIVENESS</b>						
	<b>CO trace</b>	<b>SO<sub>2</sub> trace</b>	<b>NO/NO<sub>y</sub></b>	<b>O<sub>3</sub></b>	<b>PM<sub>10-2.5</sub></b>	<b>Pb</b>
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Sample duration	Hourly	Hourly	Hourly	Hourly	Hourly	1 in 6 days
Site type	Population	Population	Population	Population	Population	Population

<b>DATA QUALITY</b>		
	<b>Date or Frequency</b>	<b>Result</b>
Last annual independent performance audit (CAB)	Partial audit: 12/3; 12/21; 12/30/11	O <sub>3</sub> , CO, PM <sub>2.5</sub> , PM <sub>10-2.5</sub> , PM <sub>2.5</sub> speciation and met all passed. Did not conduct other gas audits.
Flow rate audit frequency:	Monthly	
Precision & Accuracy submitted to AQS:	Quarterly	
Frequency of 1-pt. QC check for gases:	Weekly	
Frequency of multipoint gas calibration:	60 days	
Annual data certification submitted:	Annually by 5/1	Submitted 5/1/12
<b>REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes</b>		
Changes planned in the next 18 months:	None	

<b>(PC) PEARL CITY</b>			
AQS: 150032004	Type: SLAMS	County: Honolulu	MSA: Honolulu
Address: 860 4 <sup>th</sup> St., Pearl City, HI 96782			
Latitude: 21.39283	Longitude: -157.96913		Elevation: 23.1 m MSL
<b>Location Description:</b> This site is located on the roof of the Department of Health's Leeward Health Center in a commercial and highly populated residential area. The station is west of Hawaiian Electric Company's Wai'au Generating Station and is approximately 3 miles NW of the Pearl Harbor Naval Complex. This station has been operating since 1994.			



<b>TRAFFIC DESCRIPTION</b>				
Type of Roadway	4 <sup>th</sup> St.	Lehua Ave.	Kam. Hwy.	H-1
Freeway				X
Major Street or Highway		X	X	
Local Street or Road	X			
Distance from air intake (m)	50	138	58	320
Direction from air inlet	S	W	N	S
Composition of roadway	asphalt	asphalt	asphalt	concrete
Number of traffic lanes	2	4	6	10
Average daily traffic	No Data	15,692 (2002) <sup>1</sup>	57,948 (2007) <sup>1</sup>	No Data
Average vehicle speed (est. mph)	20	30	35	55
Traffic one way or two	2	2	2	2
Street parking?	Yes	No	No	No

<sup>1</sup> Source: State of Hawaii, Department of Transportation

<b>PC Monitor Information</b>				
	PM <sub>2.5</sub>	PM <sub>10</sub>	WS	WD
POC/FRM/FEM	4/FEM	3/FEM	Info only	Info only
Parameter Code	88101	81102	---	---
Manufacturer	Met-One	Met-One	RM Young	RM Young
Model No.	BAM 1020	BAM 1020	05103VP	05103VP
AQS Method Code (NE if not entered)	170	122	NE	NE
Monitoring start date	1/10/2009	9/29/2007	11/2003	11/2003
Frequency	Continuous	Continuous	Continuous	Continuous
Probe material	--	--	--	--
Residence Time (sec)	--	--	--	--

**PC Pearl City continued**

<b>N/A = Not applicable</b>	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>
Location of probe	Top of building	Top of building
Building dimensions		
Height (m)	12	12
Width (m)	--	--
Depth (m)	--	--
Horizontal distance from supporting structure (m)	14	14
Vertical distance above supporting structure (m)	2	2
Height of probe above ground (m)	14	14
Distance (m) & direction from tree(s)	>20 W	>20 W
Horizontal distance from edge of nearest traffic lane (m)	58	58
Horizontal distance from nearest parking lot (m)	--	--
Horizontal distance from walls, parapets, penthouses (m)	14	14
Distance & direction from nearest possible obstacle(s)	14 S	14 S
Distance & direction from furnace or incineration flues (m)	N/A	N/A
Unrestricted airflow	360°	360°
Located in paved or vegetative ground?	Paved	Paved

	<b>PM<sub>2.5</sub></b>	<b>PM<sub>10</sub></b>
Spatial scale	Neighborhood	Neighborhood
Applicable NAAQS averaging times	24-hr; Annual	24-hr
Sampling season	12-months	12-months
Site type	Population	Population

<b>DATA QUALITY</b>		
	<b>Date or Frequency</b>	<b>Result</b>
Last PEP	3/20/11	Did not receive results from EPA
Last annual independent performance audit (CAB)	10/28/11	Passed
Flow rate audit frequency:	Monthly	
Precision & Accuracy submitted to AQS:	Quarterly	
Annual data certification submitted:	Annually by 5/1	Submitted 5/1/12
<b>REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes</b>		
Changes planned in the next 18 months:	None	

<b>(SI) SAND ISLAND</b>			
AQS: 150031004	Type: SLAMS	County: Honolulu	MSA: Honolulu
Address: 1039 Sand Island Parkway, Honolulu, HI 96819			
Latitude: 21.30384	Longitude: -157.87117		Elevation: 5.3 m MSL
<b>Location Description:</b> Station is located in the University of Hawaii's Anuenue Fisheries near the entrance to the Sand Island Recreational Area. Sand Island is downwind of downtown Honolulu, across from Honolulu Harbor. This station has been operating since 1980.			



<b>TRAFFIC DESCRIPTION</b>			
Type of Roadway	Sand Island Parkway		
Freeway			
Major Street or Highway	X		
Local Street or Road			
Distance from air intake (m)	37		
Direction from air inlet	W		
Composition of roadway	asphalt		
Number of traffic lanes	2		
Average daily traffic	1610 (2007) <sup>1</sup>		
Average vehicle speed (est. mph)	30		
Traffic one way or two	2		
Street parking?	No		

<sup>1</sup> Source: State of Hawaii Department of Transportation

<b>SI MONITOR INFORMATION</b>					
<b>Meteorology:</b> WS, WD, Temp sensors attached to pole on shelter roof					
	O <sub>3</sub>	PM <sub>2.5</sub>	WS	WD	AT
POC/FRM/FEM	2/FRM	2/FEM	Info only	Info only	Info only
Parameter Code	44201	88101	---	---	---
Manufacturer	TECO	Met One	RM Young	RM Young	RM Young
Model No.	49C	BAM 1020	05103VP	05103VP	41342VC
AQS Method Code (NE if not entered)	047	170	NE	NE	NE
Monitoring start date	1/1/1980	1/1/2009	--	--	--
Frequency	Continuous	Continuous	Continuous	Continuous	Continuous
Probe material	Glass	--	--	--	--
Residence Time (sec)	17.96	--	--	--	--

**SI Sand Island continued**

<b>(N/A = Not applicable)</b>	<b>PM<sub>2.5</sub></b>	<b>O<sub>3</sub></b>
Location of probe	Top of shelter	Top of shelter
Shelter dimensions		
Height (m)	3	3
Width (m)	2	2
Depth (m)	5	5
Horizontal distance from supporting structure (m)	N/A	N/A
Vertical distance above supporting structure (m)	1.1	2
Height of probe above ground (m)	4.1	5
Distance (m) & direction from tree(s)	>20 E	>20 E
Horizontal distance from edge of nearest traffic lane (m)	37	37
Horizontal distance from nearest parking lot (m)	40	40
Horizontal distance from walls, parapets, penthouses (m)	NA	NA
Distance & direction from nearest obstacle(s)	14 N	14 N
Distance & direction from furnace or incineration flues (m)	N/A	N/A
Unrestricted airflow	360°	360°
Located in paved or vegetative ground?	vegetative	vegetative

<b>SITE REPRESENTATIVENESS</b>			
	<b>PM<sub>2.5</sub></b>	<b>O<sub>3</sub></b>	
Spatial scale	Neighborhood	Urban	
Applicable NAAQS averaging times	24-hr; Annual	8-hr	
Sampling season	12-months	12-months	
Site type	Transport	Maximum	

<b>DATA QUALITY</b>		
	<b>Date or Frequency</b>	<b>Result</b>
Last PEP	12/16/10	Did not receive results from EPA
Last NPAP	2/14/10	Passed
Last annual independent performance audit (CAB)	11/4/11	Passed
Flow rate audit frequency:	Monthly	
Precision & Accuracy submitted to AQS:	Quarterly	
Frequency of 1-pt. QC check for gases:	Weekly	
Frequency of multipoint gas calibration:	60 days	
Annual data certification submitted:	Annually by 5/1	Submitted 5/1/12
<b>REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes</b>		
Changes planned in the next 18 months:	None	

<b>(KH) KIHEI</b>			
AQS: 150090006	Type: SLAMS	County: Maui	MSA: None
Address: TMK 2-3-9-4:28 Hale Piilani Park, Kihei, HI 96753			
Latitude: 20.780997	Longitude: -156.44637		Elevation: 46.5 m MSL
<b>Location Description:</b> This station is located in the Hale Piilani subdivision's park in upper Kihei and surrounded primarily by agricultural land. The station was established to monitor the effects of sugar cane burning. This station has been operating since 1999.			



<b>TRAFFIC DESCRIPTION</b>			
Type of Roadway	Kaiolohia	Kaiwahine	
Freeway			
Major Street or Highway			
Local Street or Road	X	X	
Distance from air intake (m)	114	118	
Direction from air inlet	NW	S	
Composition of roadway	asphalt	asphalt	
Number of traffic lanes	2	2	
Average daily traffic	No data	No data	
Average vehicle speed (est. mph)	25	25	
Traffic one way or two	2	2	
Street parking?	Yes	Yes	

<b>KH MONITOR INFORMATION</b>					
<b>Meteorology:</b> WS, WD sensors attached to 10 meter tower					
	<b>PM<sub>2.5</sub></b>	<b>WS</b>	<b>WD</b>		
POC/FRM/FEM	2/FEM	Info only	Info only		
Parameter Code	88101	---	---		
Manufacturer	Met One	RM Young	RM Young		
Model No.	BAM 1020	05103VP	05103VP		
AQS Method Code (NE if not entered)	170	NE	NE		
Monitoring start date	12/1/2008	--	--		
Frequency	Continuous	Continuous	Continuous		
Probe material	---	---	---		
Residence Time (sec)	---	---	---		

**KH Kihei continued**

<b>(N/A = Not applicable)</b>		<b>PM<sub>2.5</sub></b>
Location of probe		Top of shelter
Shelter dimensions		
Height (m)		4
Width (m)		2
Depth (m)		5
Horizontal distance from supporting structure (m)		N/A
Vertical distance above supporting structure (m)		1
Height of probe above ground (m)		5
Distance (m) & direction from tree(s)		19.2 N
Horizontal distance from edge of nearest traffic lane (m)		154.5
Horizontal distance from nearest parking lot (m)		105.2
Horizontal distance from walls, parapets, penthouses (m)		N/A
Distance & direction from nearest possible obstacle(s)		N/A
Distance & direction from furnace or incineration flues (m)		N/A
Unrestricted airflow		360°
Located in paved or vegetative ground?		vegetative

<b>SITE REPRESENTATIVENESS</b>			
	<b>PM<sub>2.5</sub></b>		
Spatial scale	Neighborhood		
Applicable NAAQS averaging times	24-hr; Annual		
Sampling season	12-months		
Site type	source		
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	YES		

<b>DATA QUALITY</b>		
	<b>Date or Frequency</b>	<b>Result</b>
Last PEP	3/15/11	Did not receive results from EPA
Last annual independent performance audit (CAB)	11/7/11	Passed
Flow rate audit frequency:	Monthly	
Precision & Accuracy submitted to AQS:	Quarterly	
Annual data certification submitted:	Annually by 5/1	Submitted 5/1/12
<b>REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes</b>		
Changes planned in the next 18 months:	None	

<b>(NI) NIUMALU</b>			
AQS: 150070007	Type: SPMS	County: Kauai	MSA: None
Address: 2342 Hulemalu Rd., Lihue, HI 96766			
Latitude: 21.9495	Longitude: -159.365		Elevation: 11 m MSL
Location Description: Located on a private residential property approximately 1 mile downwind of Nawiliwili Harbor, this station was established to monitor the impact of cruise ship emissions on nearby communities. This station began operating in April 2011.			



Type of Roadway	Hulemalu Rd.	Niualu Rd.
Freeway		
Major Street or Highway		
Local Street or Road	X	X
Distance from air intake (m)	44.4	309.7
Direction from air inlet	NW	NE
Composition of roadway	asphalt	asphalt
Number of traffic lanes	2	1
Average daily traffic	100 (est.)	30 (est.)
Average vehicle speed (est. mph)	15	20
Traffic one way or two	2	2
Street parking?	No	No

<b>NI MONITOR INFORMATION</b>						
<b>Meteorology:</b> WS, WD sensors attached to pole on the shelter						
	<b>SO<sub>2</sub></b>	<b>NO<sub>2</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CO</b>	<b>WS</b>	<b>WD</b>
POC/FRM/FEM	1/FEM	1/FRM	1/FEM	1/FRM	Info only	Info only
Parameter Code	42401	42602	88101	42101	---	---
Manufacturer	TECO	Teledyne API	Met One	TECO	RM Young	RM Young
Model No.	43i	200E	BAM1020	48C	05103VP	05103VP
AQS Method Code (NE if not entered)	060	099	170	054	NE	NE
Monitoring start date	3/21/2011	3/21/2011	3/21/2011	5/18/2011	--	--
Frequency	continuous	continuous	continuous	continuous	continuous	continuous
Probe material	Glass	Glass	--	Glass	--	--
Residence Time (sec)	16.58	16.58	--	16.58	--	--

**NI Niualu continued**

<b>(N/A = Not applicable)</b>	<b>PM<sub>2.5</sub></b>	<b>Gases (CO, SO<sub>2</sub>, NO<sub>2</sub>)</b>
Location of probe	Top of shelter	Top of shelter
Shelter dimensions		
Height (m)	2.9	2.9
Width (m)	4.9	4.9
Depth (m)	2.4	2.4
Horizontal distance from supporting structure (m)	N/A	N/A
Vertical distance above supporting structure (m)	1	1
Height of probe above ground (m)	4	4
Distance (m) & direction from tree(s)	5.2 ESE	5.2 ESE
Horizontal distance from edge of nearest traffic lane (m)	44.4	44.4
Horizontal distance from nearest parking lot (m)	N/A	N/A
Horizontal distance from walls, parapets, penthouses (m)	N/A	N/A
Distance & direction from nearest possible obstacle(s)	14.6 W (house)	14.6 W (house)
Distance & direction from furnace or incineration flues (m)	N/A	N/A
Unrestricted airflow	360°	360°
Located in paved or vegetative ground?	vegetative	vegetative

<b>SITE REPRESENTATIVENESS</b>				
	<b>PM<sub>2.5</sub></b>	<b>SO<sub>2</sub></b>	<b>CO</b>	<b>NO<sub>2</sub></b>
Spatial scale	Neighborhood	Neighborhood	Neighborhood	Neighborhood
Applicable NAAQS averaging times	24-hr	1-hr; 3-hr; 24-hr; annual	1-hr; 8-hr	1-hr; annual
Sampling season	12-months	12-months	12-months	12-months
Site type	source	source	source	source

<b>DATA QUALITY</b>		
	<b>Date or Frequency</b>	<b>Result</b>
Last PEP	2/3/12	Did not receive results from EPA
Last NPAP	2/2/12	Passed
Last annual independent performance audit (CAB)	6/2/11	Passed
Flow rate audit frequency:	Monthly	
Precision & Accuracy submitted to AQS:	Quarterly	
Frequency of 1-pt. QC check for gases:	Weekly	
Frequency of multipoint gas calibration:	60 days	
Annual data certification submitted:	Annually by 5/1	Submitted 5/1/12
<b>REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes</b>		
Reasons for invalid or missing data:	TECO 48C analyzer under repair, delayed delivery of parts from manufacturer. No CO data from 8/1/11 to 12/31/11.	
Site changes:	Tree ESE of station removed 6/28/11	
Changes planned in the next 18 months:	None.	

<b>(HL) HILO</b>			
AQS: 150011006	Type: SLAMS (SO <sub>2</sub> ); SPMS (PM <sub>2.5</sub> )	County: Hawaii	MSA: None
Address: 1099 Waiianuenue Ave., Hilo, HI 96720			
Latitude: 19.71756		Longitude: -155.11053	Elevation: 136.8 m MSL
<b>Location Description:</b> Located on the grounds of the Adult Rehabilitation Center of Hilo, near the Hilo Medical Center, this site was originally established to monitor volcanic emissions during non-prevalent wind conditions. This station has been operating since 1997.			



<b>TRAFFIC DESCRIPTION</b>				
Type of Roadway	Waianuenue Ave.			
Freeway				
Major Street or Highway	X			
Local Street or Road				
Distance from air intake (m)	20			
Direction from air inlet	N			
Composition of roadway	Asphalt			
Number of traffic lanes	2			
Average daily traffic	No data			
Average vehicle speed (est. mph)	30			
Traffic one way or two	2			
Street parking?	No			

<b>Meteorology:</b> WS, WD, Temp. sensors on a 10 meter tower					
<b>HL MONITOR INFORMATION</b>					
	PM <sub>2.5</sub>	SO <sub>2</sub>	WS	WD	AT
POC/FRM/FEM	1/FEM	1/FEM	Info only	Info only	Info only
Parameter Code	88101	42401	---	---	---
Manufacturer	Met-One	TECO	RM Young	RM Young	RM Young
Model No.	BAM1020	43A	05103VP	05103VP	41342VC
AQS Method Code (NE if not entered)	170	060	NE	NE	NE
Monitoring start date	5/1/08	1/1/1997	--	--	--
Frequency	continuous	continuous	continuous	continuous	continuous
Probe material	--	Glass	--	--	--
Residence Time (sec)	--	18.11	--	--	--

**HL Hilo continued**

<b>(N/A = Not applicable)</b>	<b>PM<sub>2.5</sub></b>	<b>SO<sub>2</sub></b>
Location of probe	Top of shelter	Top of shelter
Shelter dimensions		
Height (m)	3	3
Width (m)	2.4	2.4
Depth (m)	5	5
Horizontal distance from supporting structure (m)	N/A	N/A
Vertical distance above supporting structure (m)	1.7	1
Height of probe above ground (m)	4.7	4
Distance (m) & direction from tree(s)	4.6 S	4.6 S
Horizontal distance from edge of nearest traffic lane (m)	20	20
Horizontal distance from nearest parking lot (m)	25	25
Horizontal distance from walls, parapets, penthouses (m)	N/A	N/A
Distance & direction from nearest possible obstacle(s)	4.6 S	4.6 S
Distance & direction from furnace or incineration flues (m)	29 NNW	29 NNW
Unrestricted airflow	360°	360°
Located in paved or vegetative ground?	vegetative	vegetative

<b>SITE REPRESENTATIVENESS</b>			
	<b>PM<sub>2.5</sub></b>	<b>SO<sub>2</sub></b>	
Spatial scale	Neighborhood	Neighborhood	
Applicable NAAQS averaging times	24-hr; annual	1-hr; 3-hr; 24-hr; annual	
Sampling season	12-months	12-months	
Site type	population	population	

<b>DATA QUALITY</b>		
	<b>Date or Frequency</b>	<b>Result</b>
Last PEP	7/28/08	Passed
Last NPAP	2/10/12	Passed
Last annual independent performance audit (CAB)	8/29/11	Passed
Flow rate audit frequency:	Monthly	
Precision & Accuracy submitted to AQS:	Quarterly	
Frequency of 1-pt. QC check for gases:	Weekly	
Frequency of multipoint gas calibration:	60 days	
Annual data certification submitted:	Annually by 5/1	Submitted 5/1/12

<b>REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes</b>	
Site changes:	Tree that was 4.6m S from station probe removed May 2011
Changes planned in the next 18 months:	None.

<b>(KN) KONA</b>			
AQS: 150011012	Type: SLAMS (SO <sub>2</sub> ) SPMS (PM <sub>2.5</sub> )	County: Hawaii	MSA: None
Address: 81-1043 Konawaena School Rd., Kona, HI 96750			
Latitude: 19.50978		Longitude: -155.91342	Elevation: 517.2 m MSL
Location Description: This station is located on the upper campus of Konawaena High School. It was established to measure impacts from volcanic emissions. The station has been operating at this site since 2005.			



<b>TRAFFIC DESCRIPTION</b>			
Type of Roadway	Konawaena School Rd.	Mamalahoia Hwy.	
Freeway			
Major Street or Highway		X	
Local Street or Road	X		
Distance from air intake (m)	17	702	
Direction from air inlet	N	W	
Composition of roadway	asphalt	asphalt	
Number of traffic lanes	1	2	
Average daily traffic	No data	15,503 (2006) <sup>1</sup>	
Average vehicle speed (est. mph)	10	55	
Traffic one way or two	2	2	
Street parking?	No	No	

<sup>1</sup> Source: State of Hawaii Dept. of Transportation

<b>Meteorology:</b> WS, WD, Temp. sensors on a 10 meter tower					
<b>KN MONITOR INFORMATION</b>					
	PM <sub>2.5</sub>	SO <sub>2</sub>	WS	WD	AT
POC/FRM/FEM	1/FEM	1/FEM	Info only	Info only	Info only
Parameter Code	88101	42401	---	---	---
Manufacturer	Met-One	TECO	RM Young	RM Young	RM Young
Model No.	BAM1020	43C	05103VP	05103VP	41342VC
AQS Method Code (NE if not entered)	170	060	NE	NE	NE
Parameter start date	3/15/2008	9/13/2005	9/13/2005	9/13/2005	9/13/2005
Frequency	continuous	continuous	continuous	continuous	continuous
Probe material	--	Glass	--	--	--
Residence Time (sec)	--	17.55	--	--	--

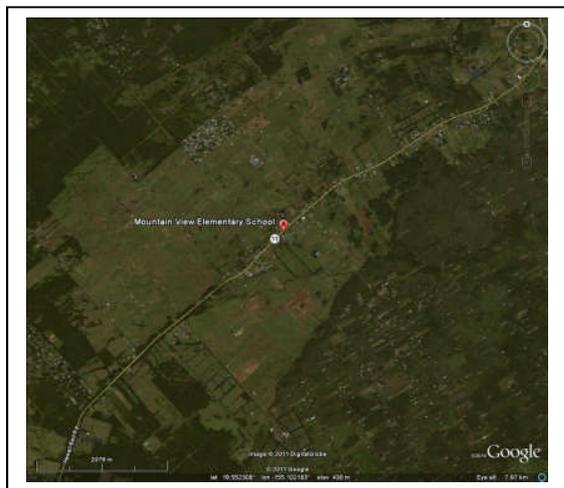
**KN Kona continued**

<b>(N/A = Not applicable)</b>	<b>PM<sub>2.5</sub></b>	<b>SO<sub>2</sub></b>
Location of probe	Top of shelter	Top of shelter
Shelter dimensions		
Height (m)	3	3
Width (m)	2.4	2.4
Depth (m)	5	5
Horizontal distance from supporting structure (m)	N/A	N/A
Vertical distance above supporting structure (m)	1	1.09
Height of probe above ground (m)	4	4
Distance (m) & direction from nearest tree(s)	38 NE	38 NE
Horizontal distance from edge of nearest traffic lane (m)	30 N	30 N
Horizontal distance from nearest parking lot (m)	N/A	N/A
Horizontal distance from walls, parapets, penthouses (m)	N/A	N/A
Distance & direction from nearest possible obstacle(s)	21 SSW (tank)	21 SSW (tank)
Distance & direction from furnace or incineration flues (m)	N/A	N/A
Unrestricted airflow	360°	360°
Located in paved or vegetative ground?	vegetative	vegetative

<b>SITE REPRESENTATIVENESS</b>			
	<b>PM<sub>2.5</sub></b>	<b>SO<sub>2</sub></b>	
Spatial scale	Neighborhood	Neighborhood	
Applicable NAAQS averaging times	24-hr; annual	1-hr; 3-hr; 24-hr; annual	
Sampling season	12-months	12-months	
Site type	maximum	population	

<b>DATA QUALITY</b>		
	<b>Date or Frequency</b>	<b>Result</b>
Last PEP	7/30/08	Passed
Last NPAP	3/17/11	Did not receive results from EPA
Last annual independent performance audit (CAB)	8/30/11	Passed
Flow rate audit frequency:	Monthly	
Precision & Accuracy submitted to AQS:	Quarterly	
Frequency of 1-pt. QC check for gases:	Weekly	
Frequency of multipoint gas calibration:	60 days	
Annual data certification submitted:	5/1/11	
<b>REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes</b>		
Changes planned in the next 18 months:	Co-locate a PM <sub>2.5</sub> FEM (BAM 1020) monitor	

<b>(MV) MOUNTAIN VIEW</b>			
AQS: 150012023	Type: SPMS	County: Hawaii	MSA: None
Address: 17-1235 Volcano Rd., Mt. View, HI 96771			
Latitude: 19.57002	Longitude: -155.08046	Elevation: 436.5 m MSL	
<b>Location Description:</b> This station is located on the grounds of the Mt. View Elementary School. The original Mt. View station, which began in December 2007, was moved at the ending of 2010 approximately 1.8 miles southwest to this current location. Due to the proximity of this community to the Kilauea volcano, it was established to monitor volcanic emissions during non-trade wind days.			



<b>TRAFFIC DESCRIPTION</b>			
Type of Roadway	Volcano Rd.		
Freeway			
Major Street or Highway	X		
Local Street or Road			
Distance from air intake (m)	30.5		
Direction from air inlet	N		
Composition of roadway	asphalt		
Number of traffic lanes	2		
Average daily traffic	5,207 <sup>1</sup> (2006)		
Average vehicle speed (est. mph)	40		
Traffic one way or two	2		
Street parking?	No		

<sup>1</sup> Source: State of Hawaii Dept. of Transportation

<b>Meteorology:</b> WS, WD, Temp. sensors on a 10 meter tower					
<b>MV MONITOR INFORMATION</b>					
	PM <sub>2.5</sub>	SO <sub>2</sub>	WS	WD	
POC/FRM/FEM	1/FEM	1/FEM	Info only	Info only	
Parameter Code	88101	42401	---	---	
Manufacturer	Met-One	TECO	RM Young	RM Young	
Model No.	BAM1020	43i	05103VP	05103VP	
AQS Method Code (NE if not entered)	170	060	NE	NE	
Parameter start date	12/7/2010	12/8/2010	12/7/2010	12/7/2010	
Frequency	continuous	continuous	continuous	continuous	
Probe material	--	Glass	--	--	
Residence Time (sec)	--	18.16	--	--	

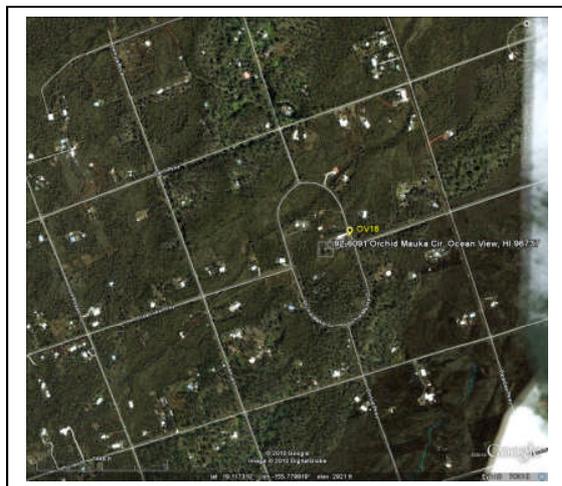
**MV Mt. View continued**

<b>(N/A = Not applicable)</b>	<b>PM<sub>2.5</sub></b>	<b>SO<sub>2</sub></b>
Location of probe	Top of shelter	Top of shelter
Shelter dimensions		
Height (m)	3	3
Width (m)	2.4	2.4
Depth (m)	5	5
Horizontal distance from supporting structure (m)	N/A	N/A
Vertical distance above supporting structure (m)	1	1
Height of probe above ground (m)	4	4
Distance (m) & direction from nearest tree(s)	18 W	18 W
Horizontal distance from edge of nearest traffic lane (m)	6.5	6.5
Horizontal distance from nearest parking lot (m)	46.5	46.5
Horizontal distance from walls, parapets, penthouses (m)	N/A	N/A
Distance & direction from nearest possible obstacle(s)	None	None
Distance & direction from furnace or incineration flues (m)	N/A	N/A
Unrestricted airflow	360°	360°
Located in paved or vegetative ground?	vegetative	vegetative

<b>SITE REPRESENTATIVENESS</b>			
	<b>PM<sub>2.5</sub></b>	<b>SO<sub>2</sub></b>	
Spatial scale	Neighborhood	Neighborhood	
Applicable NAAQS averaging times	24-hr; annual	1-hr; 3-hr; 24-hr; annual	
Sampling season	12-months	12-months	
Site type	source	source	

<b>DATA QUALITY</b>		
	<b>Date or Frequency</b>	<b>Result</b>
Last PEP		None
Last NPAP	2/13/12	Passed
Last annual independent performance audit (CAB)	8/29/11	Passed
Flow rate audit frequency:	Monthly	
Precision & Accuracy submitted to AQS:	Quarterly	
Frequency of 1-pt. QC check for gases:	Weekly	
Frequency of multipoint gas calibration:	60 days	
Annual data certification submitted:	Annually by 5/1	Submitted 5/1/12
<b>REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes</b>		
Changes planned in the next 18 months:	None	

<b>(OV) OCEAN VIEW</b>			
AQS: 150012020	Type: SPMS	County: Hawaii	MSA: None
Address: 92-6091 Orchid Mauka Circle, Ocean View, HI 96737			
Latitude: 19.11756	Longitude: -155.77814		Elevation: 862.6 m MSL
Location Description: This station established in 2010 is located on the grounds of the Ocean View Fire Station. During normal trade-winds, volcanic emissions are carried into this residential/agricultural community.			



<b>TRAFFIC DESCRIPTION</b>			
Type of Roadway	Orchid Mauka Circ.		
Freeway			
Major Street or Highway			
Local Street or Road	X		
Distance from air intake (m)	13.6		
Direction from air inlet	ENE		
Composition of roadway	asphalt		
Number of traffic lanes	2		
Average daily traffic	No data		
Average vehicle speed (est. mph)	25		
Traffic one way or two	2		
Street parking?	No		

<b>Meteorology:</b> WS, WD, Temp. sensors on a 10 meter tower					
<b>OV MONITOR INFORMATION</b>					
	PM <sub>2.5</sub>	SO <sub>2</sub>	WS	WD	
POC/FRM/FEM	1/FEM	1/FEM	Info only	Info only	
Parameter Code	88101	42401	---	---	
Manufacturer	Met-One	TECO	RM Young	RM Young	
Model No.	BAM1020	43i	05103VP	05103VP	
AQS Method Code (NE if not entered)	170	060	NE	NE	
Parameter start date	4/1/2010	4/1/2010	4/1/2010	4/1/2010	
Frequency	continuous	continuous	continuous	continuous	
Probe material	--	Glass	--	--	
Residence Time (sec)	--	18.34	--	--	

**OV Ocean View continued**

<b>(N/A = Not applicable)</b>	<b>PM<sub>2.5</sub></b>	<b>SO<sub>2</sub></b>
Location of probe	Top of shelter	Top of shelter
Shelter dimensions		
Height (m)	3	3
Width (m)	2.4	2.4
Depth (m)	5	5
Horizontal distance from supporting structure (m)	N/A	N/A
Vertical distance above supporting structure (m)	1.1	1
Height of probe above ground (m)	4.1	4
Distance (m) & direction from nearest tree(s)	7 ENE	7 ENE
Horizontal distance from edge of nearest traffic lane (m)	13.6	13.6
Horizontal distance from nearest parking lot (m)	6.4	6.4
Horizontal distance from walls, parapets, penthouses (m)	N/A	N/A
Distance & direction from nearest possible obstacle(s)	7 ENE	7 ENE
Distance & direction from furnace or incineration flues (m)	N/A	N/A
Unrestricted airflow	360°	360°
Located in paved or vegetative ground?	vegetative	vegetative

<b>SITE REPRESENTATIVENESS</b>			
	<b>PM<sub>2.5</sub></b>	<b>SO<sub>2</sub></b>	
Spatial scale	Neighborhood	Neighborhood	
Applicable NAAQS averaging times	24-hr; annual	1-hr; 3-hr; 24-hr; annual	
Sampling season	12-months	12-months	
Site type	source	welfare	

<b>DATA QUALITY</b>		
	<b>Date or Frequency</b>	<b>Result</b>
Last PEP		None
Last NPAP	2/9/12	Passed
Last annual independent performance audit (CAB)	8/31/11	Passed
Flow rate audit frequency:	Monthly	
Precision & Accuracy submitted to AQS:	Quarterly	
Frequency of 1-pt. QC check for gases:	Weekly	
Frequency of multipoint gas calibration:	60 days	
Annual data certification submitted:	Annually by 5/1	Submitted 5/1/12
<b>REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes</b>		
Changes planned in the next 18 months:	Tree that is 7m from the station trimmed June 2011	

<b>(PA) PAHALA</b>			
AQS: 150012016	Type: SPMS	County: Hawaii	MSA: None
Address: 96-3150 Pikake St., Pahala, HI 96777			
Latitude: 19.2039	Longitude: -155.48018		Elevation: 320 m MSL
Location Description: This station is located on the grounds of the Ka'u High/Pahala Elementary School. During normal trade-winds, volcanic emissions are carried into this rural community. The station began operating in 2007.			



<b>TRAFFIC DESCRIPTION</b>			
Type of Roadway	Puahala	Pumeli	
Freeway			
Major Street or Highway			
Local Street or Road	X	X	
Distance from air intake (m)	226	61	
Direction from air inlet	E	N	
Composition of roadway	Asphalt	Asphalt	
Number of traffic lanes	2	2	
Average daily traffic	No data	No data	
Average vehicle speed (est. mph)	25 mph	25 mph	
Traffic one way or two	2	2	
Street parking?	No	No	

<b>Meteorology:</b> WS, WD, Temp. sensors on a 10 meter tower					
<b>PA MONITOR INFORMATION</b>					
	PM <sub>2.5</sub>	SO <sub>2</sub>	WS	WD	
POC/FRM/FEM	1/FEM	1/FEM	Info only	Info only	
Parameter Code	88101	42401	---	---	
Manufacturer	Met-One	TECO	RM Young	RM Young	
Model No.	BAM1020	43i	05103VP	05103VP	
AQS Method Code (NE if not entered)	170	060	NE	NE	
Parameter start date	4/11/2008	8/10/2007	8/10/2007	8/10/2007	
Frequency	continuous	continuous	continuous	continuous	
Probe material	--	Glass	--	--	
Residence Time (sec)	--	18.22	--	--	

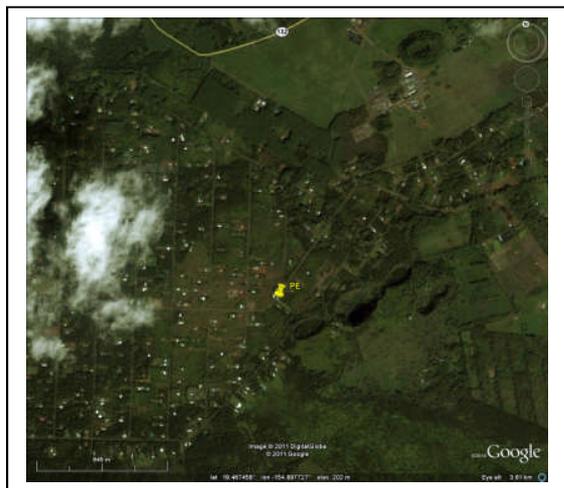
**PA Pahala continued**

<b>(N/A = Not applicable)</b>	<b>PM<sub>2.5</sub></b>	<b>SO<sub>2</sub></b>
Location of probe	Top of shelter	Top of shelter
Shelter dimensions		
Height (m)	2.4	2.4
Width (m)	2.4	2.4
Depth (m)	6	6
Horizontal distance from supporting structure (m)	N/A	N/A
Vertical distance above supporting structure (m)	1	1
Height of probe above ground (m)	3.4	3.4
Distance (m) & direction from nearest tree(s)	11 N	11 N
Horizontal distance from edge of nearest traffic lane (m)	48 S	48 S
Horizontal distance from nearest parking lot (m)	73 S	73 S
Horizontal distance from walls, parapets, penthouses (m)	N/A	N/A
Distance & direction from nearest possible obstacle(s)	24 W	24 W
Distance & direction from furnace or incineration flues (m)	N/A	N/A
Unrestricted airflow	360°	360°
Located in paved or vegetative ground?	vegetative	vegetative

<b>SITE REPRESENTATIVENESS</b>			
	<b>PM<sub>2.5</sub></b>	<b>SO<sub>2</sub></b>	
Spatial scale	Neighborhood	Neighborhood	
Applicable NAAQS averaging times	24-hr; annual	1-hr; 3-hr; 24-hr; annual	
Sampling season	12-months	12-months	
Site type	source	maximum	
Suitable for comparison against the annual PM <sub>2.5</sub> NAAQS?	YES		

<b>DATA QUALITY</b>		
	<b>Date or Frequency</b>	<b>Result</b>
Last PEP	3/17/11	Did not receive results from EPA
Last NPAP	7/29/08	Passed
Last annual independent performance audit (CAB)	8/31/11	Passed
Flow rate audit frequency:	Monthly	
Precision & Accuracy submitted to AQS:	Quarterly	
Frequency of 1-pt. QC check for gases:	Weekly	
Frequency of multipoint gas calibration:	60 days	
Annual data certification submitted:	Annually by 5/1	Submitted 5/1/12
<b>REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes</b>		
Changes planned in the next 18 months:	None	

<b>(PE) PUNA E</b>			
AQS: 150012010	Type: SPMS non-regulatory	County: Hawaii	MSA: None
Address: 13-763 Leilani Ave., Pahoa, HI			
Latitude: 19.46399	Longitude: -154.89871	Elevation: 207.9 m MSL	
<b>Location Description:</b> Located on a residential property in Leilani Estates, this station is primarily to monitor emissions from the nearby geothermal energy facility. In 2005, an SO <sub>2</sub> monitor was added to measure any effects from volcanic emissions. However, since this is primarily an H <sub>2</sub> S site, the probe is at breathing height, below EPA requirements and is therefore non-regulatory for SO <sub>2</sub> .			



Type of Roadway	Leilani Blvd.
Freeway	
Major Street or Highway	
Local Street or Road	X
Distance from air intake (m)	25.6
Direction from air inlet	NE
Composition of roadway	asphalt
Number of traffic lanes	2
Average daily traffic	No data
Average vehicle speed (est. mph)	25
Traffic one way or two	2
Street parking?	Yes

<b>Meteorology:</b> WS, WD, Temp. sensors on a 10 meter tower					
<b>PE MONITOR INFORMATION</b>					
	SO <sub>2</sub>	H <sub>2</sub> S	WS	WD	
POC/FRM/FEM	1/FEM	---	Info only	Info only	
Parameter Code	42401	NA	---	---	
Manufacturer	TECO	TECO	RM Young	RM Young	
Model No.	43C	43C	05103VP	05103VP	
AQS Method Code (NE if not entered)	060	NE	NE	NE	
Parameter start date	2/16/2005	3/91	3/91	3/91	
Frequency	continuous	continuous	continuous	continuous	
Probe material	Teflon	Teflon	--	--	
Residence Time (sec)	16.24	16.24			

**PE Puna E continued**

<b>(N/A = Not applicable)</b>	<b>SO<sub>2</sub>, H<sub>2</sub>S</b>	
Location of probe	Top of shelter	
Shelter dimensions		
Height (m)	3	
Width (m)	2.4	
Depth (m)	5	
Horizontal distance from supporting structure (m)	1.2	
Vertical distance above supporting structure (m)	side of trailer	
Height of probe above ground (m)	1.8	
Distance (m) & direction from nearest tree(s)	17 SW	
Horizontal distance from edge of nearest traffic lane (m)	26	
Horizontal distance from nearest parking lot (m)	N/A	
Horizontal distance from walls, parapets, penthouses (m)	1.2 side of trailer	
Distance & direction from nearest possible obstacle(s)	1.2 side of trailer	
Distance & direction from furnace or incineration flues (m)	N/A	
Unrestricted airflow	180°	
Located in paved or vegetative ground?	vegetative	

	<b>SO<sub>2</sub></b>	<b>H<sub>2</sub>S</b>
Spatial scale	Neighborhood	Neighborhood
Applicable NAAQS averaging times	Not comparable to NAAQS (non-regulatory). Probe height does not meet 40 CFR 58 App. E, probe at breathing height for H <sub>2</sub> S	1-hr state standard of 25 ppb
Sampling season	12-months	12-months
Site type	Source	Source

<b>DATA QUALITY</b>		
	<b>Date or Frequency</b>	<b>Result</b>
Last PEP		
Last NPAP	2/14/12	Passed
Last annual independent performance audit (CAB)	9/1/11	Passed
Flow rate audit frequency		
Precision & Accuracy submitted to AQS:	Quarterly	
Frequency of 1-pt. QC check for gases:	Weekly	
Frequency of multipoint gas calibration:	60 days	
Annual data certification submitted:	Annually by 5/1	Submitted 5/1/12
<b>REASONS FOR INVALID OR MISSING DATA; OTHER SITE CHANGES and Notes</b>		
Changes planned in the next 18 months	None	