

2011 Oregon Annual Ambient Air Monitoring Network Plan

Submitted to: Environmental Protection Agency, Region 10.

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State of Oregon
Department of
Environmental
Quality



2011 Oregon Annual Ambient Air Monitoring Network Plan

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Glossary of Air Quality Terms used in this report:

| | |
|-------------------|--|
| AQI | Air Quality Index – standardized EPA method of reporting air quality |
| CO | Carbon monoxide – An odorless, colorless gaseous pollutant |
| HAPs | Hazardous Air Pollutant as defined in Title III of the Clean Air Act |
| IMPROVE | EPA’s PM _{2.5} speciation visibility network |
| NAAQS | National Ambient Air Quality Standards – federal air quality standards (Table 4). |
| NADP | National Atmospheric Deposition Program |
| NO | Nitrogen oxide |
| NO ₂ | Nitrogen dioxide |
| NO _x | Nitrogen oxides – redish brown gaseous pollutant - mainly NO and NO ₂ |
| NO _y | NO _x + HNO ₃ + organic nitrates + inorganic nitrates = NO _x + NO _z |
| NO _z | Oxidation products of NO _x = NO _y * (1 - NO _x /NO _y) |
| O ₃ | Ozone – a gaseous pollutant and a component of smog at ground level |
| PM _{2.5} | Particulate Matter 2.5 micrometers in diameter and smaller |
| PM ₁₀ | Particulate Matter 10 micrometers in diameter and smaller |
| SO ₂ | Sulfur dioxide |
| VOC | Volatile Organic Compounds |
| WAQR | Wildfire Air Quality Rating - wildfire smoke health internet page |

Air Pollutant Concentration Units:

| | |
|-------------------|---------------------------|
| ppm | Parts per million |
| ppb | Parts per billion |
| µg/m ³ | Microgram per cubic meter |
| ng/m ³ | Nanograms per cubic meter |

2011 Oregon Annual Ambient Air Monitoring Network Plan

1 Purpose

Code of Federal regulations, 40 CFR 58.10, requires the state and local air quality surveillance agencies to write an annual ambient air quality monitoring network plan. EPA requires the plan to be put out for public comment and submitted to EPA by July 1st. This report is used to determine if the network meets the monitoring objectives defined in Part 58, Appendix D and to propose modifications to the network in the following year. A more detailed air quality data summary is available annually at <http://www.deq.state.or.us/aq/forms/annrpt.htm>.

2 Introduction

The Oregon Department of Environmental Quality's (ODEQ) ambient air quality monitoring network is designed in response to the Environmental Protection Agency's (EPA) National Monitoring Strategy, state and local needs, the requirements of air quality maintenance plans and the State Implementation Plans (SIPs) for non-attainment areas, and CFR requirements.

2.1 National Monitoring Strategy

The National Monitoring Strategy directs state and local agencies to operate more continuous monitors and to collect real time air quality data. The real time information is available through EPA's AIRNow and ODEQ's Air Quality Index (AQI) web pages. In particular, EPA encouraged states to use continuous PM_{2.5} monitors instead of the filter base samplers which do not provide real time information. The National Monitoring Strategy also created National Core (NCORE) sites which contain equipment to perform a wide array of pollutant monitoring. ODEQ's NCORE site has monitors for Carbon monoxide (CO), Nitrogen oxides (NO_y and NO₂), Sulfur dioxide (SO₂), ozone (O₃), particulate matter 2.5 and 10 micrometers in diameter and smaller (PM_{2.5} and PM₁₀), PM coarse (PM₁₀-PM_{2.5}=PM_c), PM_{2.5} Speciation, visibility, black carbon, and meteorology. Our NCORE site is at SE Lafayette, Portland

State and Local Support

Our monitors support state and local needs by providing data for the Wildfire Air Quality Rating (WAQR), local wood stove management programs, Clean Air Quality Advisories for ozone, the Department of Agriculture's field burning program, and the US Forest Service and BLM's forest health program. ODEQ also operates a visibility network in the Cascades and near the Eagle Cap wilderness to support Regional Haze requirements protecting pristine Class 1 areas.

AQ Maintenance and Non-attainment support

ODEQ monitoring supports the SIPs and maintenance plans developed for many cities. ODEQ also has monitors in attainment areas with fast growing populations to support pollution prevention measures.

CFR requirements

Monitoring objectives were established and siting was selected in accordance with Appendix D of 40 CFR 58. The network was designed to meet the five basic monitoring objectives specified by federal regulations:

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- (1) to determine highest concentrations expected to occur in the area covered by the network;
- (2) to determine representative concentrations in areas of high population density;
- (3) to determine the impact of significant sources or source categories on ambient pollution levels;
- (4) to determine general background concentration levels; and
- (5) to determine transport characteristics into and out of airsheds.

The current network was sited to ensure the spatial scale of the sampling matches the monitoring objective of the station. Each station in the SLAMS/NCORE network was sited in accordance with the criteria in 40 CFR Part 58, Appendix E. Quality Assurance requirements have been fully implemented through the Department's Quality Assurance Project Plan (QAPP) reviewed by EPA.

2.2 Non-attainment and Maintenance Areas

Areas are designated attainment or non-attainment a few years after a standard is proposed. If an area exceeds the standard a State Implementation Plan (SIP) is written to bring an area into attainment. After monitoring shows a non-attainment area has reached attainment, a maintenance plan is created to keep it there. Listed below are Oregon's current non-attainment and maintenance areas.

2.2.1 Non-attainment Areas:

CO: None

PM₁₀ : Eugene/Springfield Urban Growth Area (maintenance plan in development)
Oakridge Urban Growth Boundary (maintenance plan in development)

8hr Ozone None

PM_{2.5} Klamath Falls Urban Growth Boundary
Oakridge Urban Growth Boundary

2.2.2 Maintenance Areas in Oregon (formerly non-attainment areas):

CO: Eugene/Springfield Area
Grants Pass Central Business District
Portland Metropolitan Service District Boundary
Klamath Falls Urban Growth Boundary
Medford Urban Growth Boundary
Salem-Kaiser Area Transportation Study

PM₁₀: Grants Pass Urban Growth Boundary
Klamath Falls Urban Growth Boundary
Medford-Ashland Air Quality Maintenance Area
La Grande Urban Growth Boundary
Lakeview Urban Growth Boundary

Ozone (1hr): Portland/Vancouver AQMA

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3 Major Network Modifications between July 2010 and June 2011

All major modifications to the ambient air quality monitoring network are submitted to the regional administrator for review and approval in the network assessment. Modifications occurring after the 2010 Network Assessment are as follows:

ODEQ

Discontinued Monitors:

- 1) Discontinued PM_{2.5} FRM sampling at Portland N. Roselawn (41-051-0246).
The five year Network Assessment showed that this site was redundant with Portland, SE Lafayette (41-051-0080). These funds were shifted to PM_{2.5} FRM sampling in Sweet Home (41-043-2002).
- 2) Discontinued PM_{2.5} FRM sampling at La Grande, Ash St. (41-061-0119).
This site was consistently below 75% of the NAAQS. The nephelometer remains at the site for the woodstove advisory program. These resources are also supporting the site in Sweet Home.
- 3) Discontinued PM_{2.5} FRM sampling at Bend, Pump Station (41-017-0120).
This site was consistently below 75% of the NAAQS. The nephelometer remains at the site for the woodstove advisory program. The FRM funds were shifted to the Prineville (41-013-0100) PM_{2.5} FRM sampler, previously funded by the state.
- 4) Discontinued PM_{2.5} FRM sampling at Medford Dodge Rd. background site (41-029-1001).
Cost savings purposes.
- 5) Discontinued PM_{2.5} FRM duplicate sampling at Hillsboro, Hare Field (41-067-0004).
The reductions in PM_{2.5} FRM samplers in 2011 resulted in a lowering of the requirement duplicate sites from three to two.
- 6) Discontinued the Klamath Falls Background site (41-035-0015) which included a nephelometer and meteorology.
This site had operated for two years and had collected enough data for the Klamath Falls SIP process. This was an ODEQ funded site. Resources were used to perform a fine PM survey of Klamath Falls.
- 7) Discontinued the Portland, Postal Building CO site (41-051-0087).
CO levels were well below the NAAQS as discussed in the five year network assessment. Funds were redirected to pollutants closer to the NAAQS.
- 8) Discontinued the Medford Rogue Valley Mall CO site (41-029-0018)
CO levels were well below the NAAQS as discussed in the five year network assessment. Funds were redirected to pollutants closer to the NAAQS.
- 9) Discontinued PM₁₀ FRM sampling at Pendleton, McKay Creek (41-059-0121).
PM₁₀ levels were well below the NAAQS as discussed in the five year network assessment.
- 10) Discontinued PM₁₀ FRM sampling at Medford Welch and Jackson (41-029-2129).
PM₁₀ levels were well below the NAAQS as discussed in the five year network assessment. The White City PM₁₀ site remains in operation. It has the highest PM₁₀ levels in the basin.
- 11) Discontinued air toxics monitoring at Salem, State Hospital (41-047-0041).
Site was deemed to have enough data. Resources were moved to support an air toxics site in Klamath Falls.
- 11) Discontinued the Halsey field burning meteorology site.
New state rules restrict field burning to the North Willamette Valley. This site was funded by the Oregon Department of Agriculture. Resources supporting a new met station in Silverton.
- 12) Discontinued monitoring for wet Mercury Deposition January 1, 2011 at Beaverton Highland Park (41-067-0111). The grant's funding ended.

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Started:

- 1) Started up a nephelometer and meteorology site at Silverton (41-047-0007) as part of the Willamette Valley Field Burning Network. Funding for this site was shifted from Halsey meteorology and Spangler Road nephelometry because of new rules restricting field burning to the North Willamette Valley. The Oregon Department of Agriculture (summertime) and ODEQ fund this site.
- 2) Started up a duplicate PM_{2.5} FRM at Hillsboro, Hare Field (41-067-0004) to meet the 15% precision requirement. Later shut this site down.
- 3) Started every third day sampling at Sweet Home (41-043-2002) because the estimated 2007-2009 PM_{2.5} values from the nephelometer were within 5% of the NAAQS.
- 4) Started NO_y monitoring at Portland, SE Lafayette (41-051-0080), the NCore site.
- 5) Started air toxics monitoring in Klamath Falls, Peterson School (41-035-0004). State funded.

Changed:

- 1) Change sampling schedule from every sixth day to every third day at Prineville (41-13-0100) because the 2009 PM_{2.5} values were within 5% of the NAAQS.

LRAPA

Discontinued:

- 1) Discontinued PM₁₀ FRM sampling at Eugene, Lane Community College (41-039-0013). This site was redundant as discussed in the five year plan.
- 2) Discontinued CO monitoring at Eugene, Lane Community College (41-039-0013). CO levels were well below the NAAQS as discussed in the five year network assessment.

Started:

- 1) Ran a one year, two site Air Toxic survey in Eugene at Amazon Park (41-039-0060) and Petersen Park (41-039-0062).

Changed:

No sampling schedule changes.

4 Status of the Current Ambient Air Monitoring Network

Section 4 contains the current listing of Oregon's SLAMS/NCORE network for: PM₁₀, PM_{2.5}, PM_{2.5} chemical speciation, PM_{coarse}, Continuous PM_{2.5} Estimates, SO₂, NO₂, NO_y, CO, O₃, Lead, Air toxics, Visibility, Forest Health, Field Burning, and Meteorology.

4.1 Particulate Matter (PM₁₀, EPA pollutant #81102 or 85101)

Oregon had many non-attainment areas for PM₁₀ but the PM₁₀ levels have trended down dramatically since these designations were made and SIP and maintenance programs were put in place. Figures 1 and 2 show the PM₁₀ trends.

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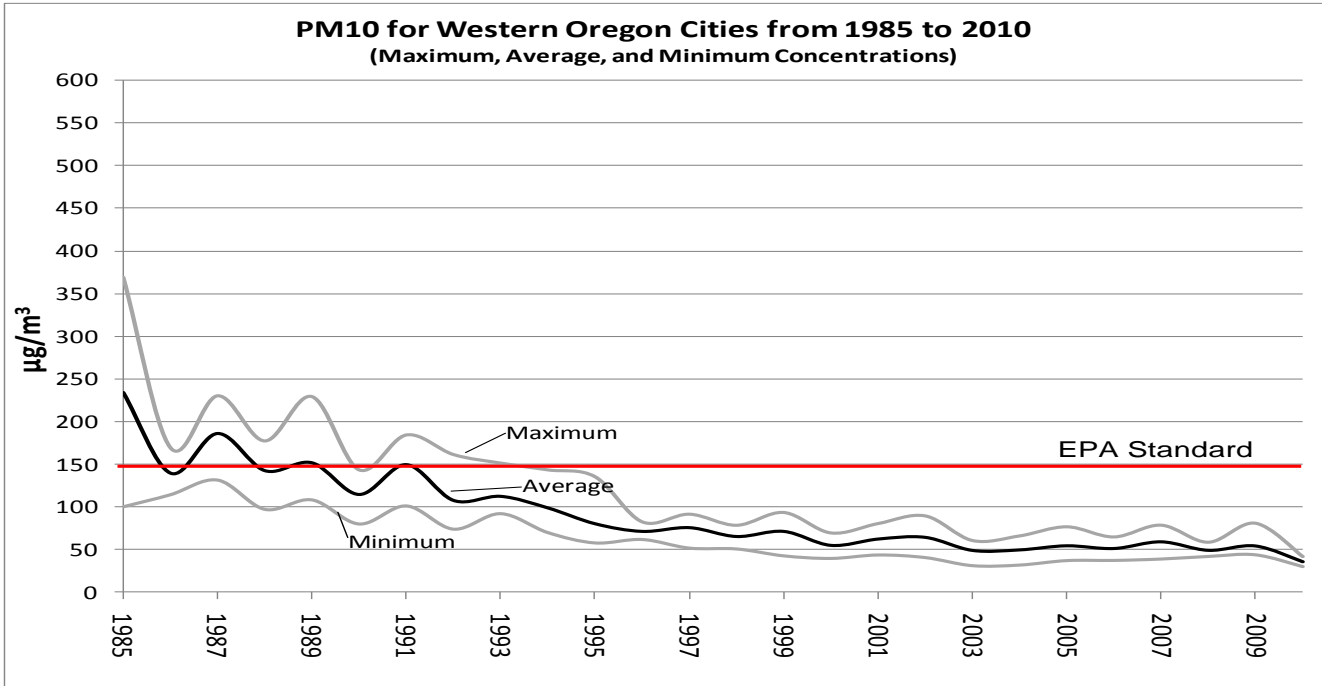


Figure 1. PM₁₀ trend for Western Oregon cities using the second highest 24 hr average.

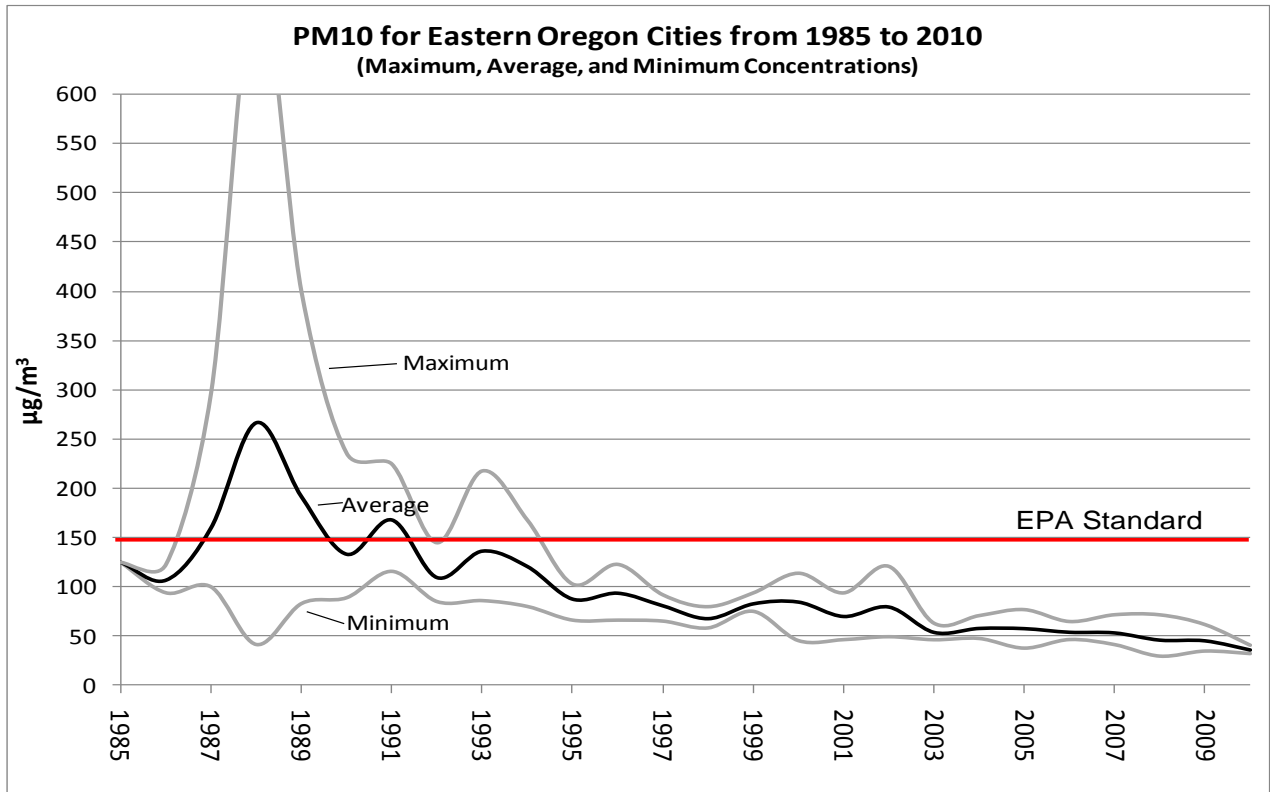


Figure 2. PM₁₀ trend for Eastern Oregon cities using the second highest 24 hr average.

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Network:

ODEQ and LRAPA continue to operate samplers in some of these areas to satisfy terms of the maintenance and State Implementation Plans and to fulfill the 40 CFR Part 59 Appendix D (2.8 & 3.7) requirements for SLAMS/NCORE. Other sites are related to air toxics or run for pollution prevention purposes.

The sites are listed in Table 1 and shown in Figure 3.

Table 1. 2010-2011 Oregon PM₁₀ Monitoring Sites: SLAMS/NCORE.

| EPA # | City/Name | Assessment Method | Project Type | Project Objective | Measurement Scale | Primary or Dup | Sampling Frequency | Comment |
|-----------|--------------------------|-------------------|--------------|-------------------|-------------------|----------------|--------------------|--------------|
| 410294001 | Uninc./White City | 127 | SLAMS | Conc | Middle | Prim | 1/6 | |
| 410290133 | Medford/Grant&Belmont | 063 | SLAMS | Pop/HAPS | Nghbr | Prim | 1/6 | |
| 410292129 | Medford/Welch&Jackson | 127 | SLAMS | Conc | Nghbr | Prim | 1/6 | Discontinued |
| 410350004 | K. Falls/Peterson School | 127 | SLAMS | Population | Nghbr | Prim | 1/6 | Discontinued |
| 410350004 | K. Falls/Peterson School | 063 | SLAMS | Pop/HAPS | Nghbr | Prim | 1/6 | Installed |
| 410390013 | Eugene/LCC | 127 | SLAMS | Population | Nghbr | Prim | 1/3 | Discontinued |
| 410390058 | Eugene/Key Bank | 127 | SLAMS | Conc | Nghbr | Prim | 1/3 | |
| 410390060 | Eugene/Amazon Park | 063 | SLAMS | Pop/HAPS | Nghbr | Prim | 1/6 | |
| 410390060 | Eugene/Petersen Park | 063 | SLAMS | Pop/HAPS | Nghbr | Prim | 1/6 | Installed |
| 410392013 | Oakridge/WillametteCnt | 127 | SLAMS | Conc | Nghbr | Prim | 1/6 | |
| 410470040 | Salem State Hospital | 063 | SLAMS | Pop/HAPS | Nghbr | Prim | 1/6 | Discontinued |
| 410510009 | Portland/Transcon | 127 | SLAMS | Conc | Middle | Prim/Dup | 1/6 | |
| 410510080 | Portland/SE Lafayette | 127 | NCORE | Population | Nghbr | Prim | 1/6 | |
| 410510246 | Portland/N. Roselawn | 063 | SLAMS | Pop/HAPS | Nghbr | Prim/Dup | 1/6 | |
| 410590121 | Pendleton/McKay Creek | 127 | SLAMS | Population | Nghbr | Prim | 1/6 | Discontinued |
| 410610119 | LaGrande/Ash Street | 063 | SLAMS | Pop/HAPS | Nghbr | Prim | 1/6 | |

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2011 Oregon PM₁₀ NAAQS Compliance Surveillance Network

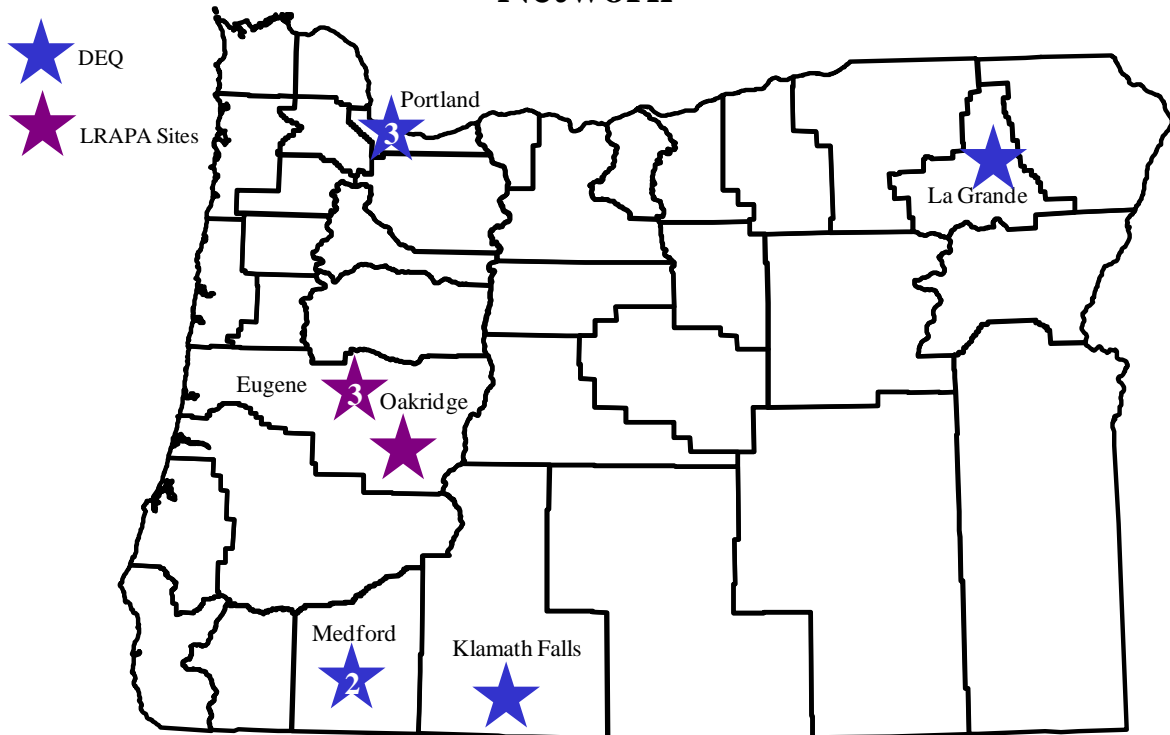


Figure 3. July 2010-June 2011 Oregon PM₁₀ monitor locations.

The Salem, Medford-Welch and Jackson, and Pendleton samplers were removed in late 2010.

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4.2 Particulate Matter (PM_{2.5}, EPA pollutant #88101)

Trends

Oregon has at least two cities (Oakridge and Klamath Falls) that currently violate the new PM_{2.5} daily standard of the three year average 98th percentile of 35ug/m³. There is one additional city (Lakeview) whose 2008-2010 98th Percentile was above the standard. There are also numerous cities in Oregon that are areas of concern with three year average 98th percentiles above 25ug/m³. Figure 4 shows these cities and all average 98th percentile for 2008-2010. Figures 5 through 8 show the PM_{2.5} (Federal Reference Method data) trends for Oregon cities.

2008-2010 Oregon Cities Compared to the New Daily PM_{2.5} Standard

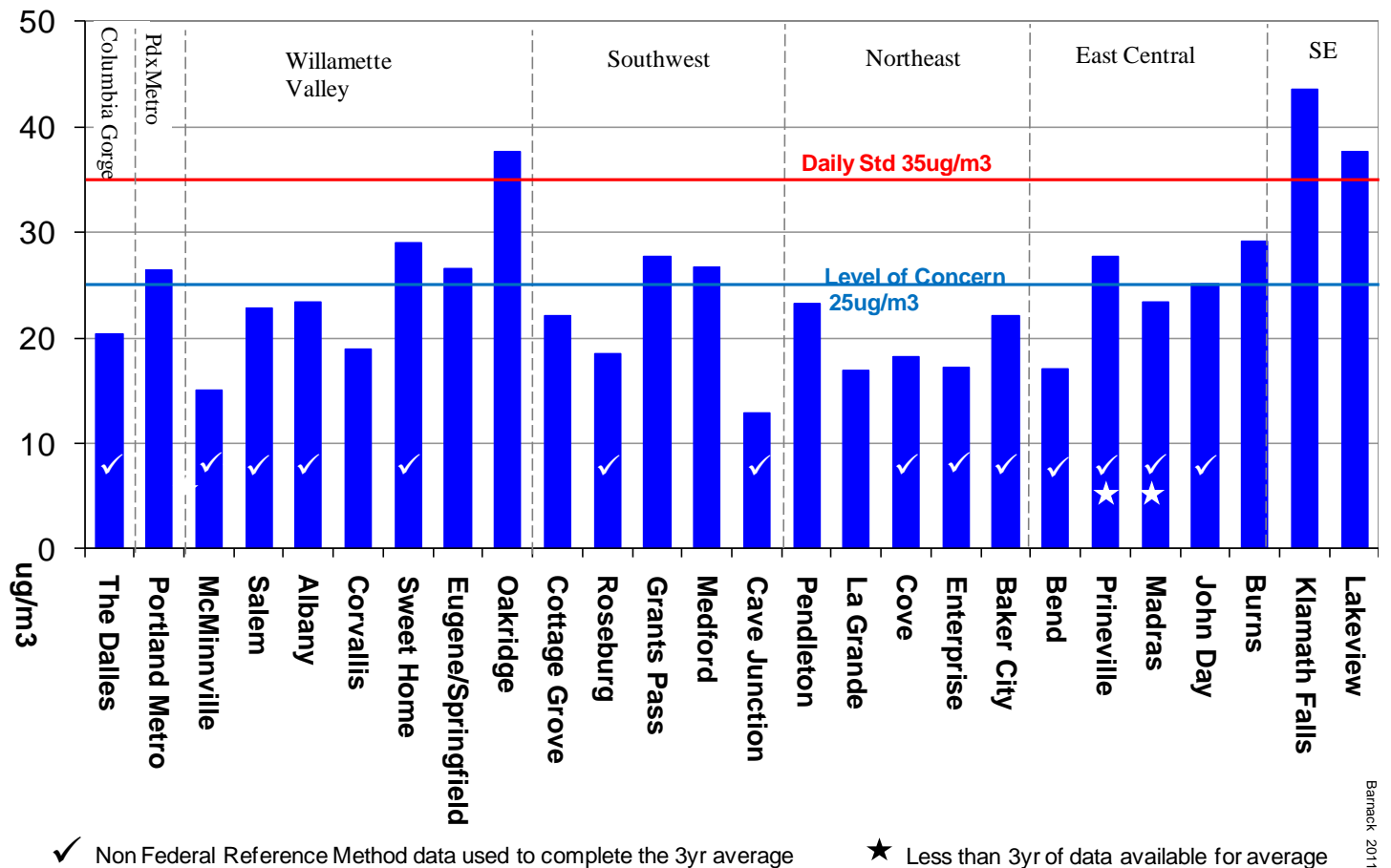


Figure 4. Average 98th percentile PM_{2.5} for 2008-2010 for Oregon cities.

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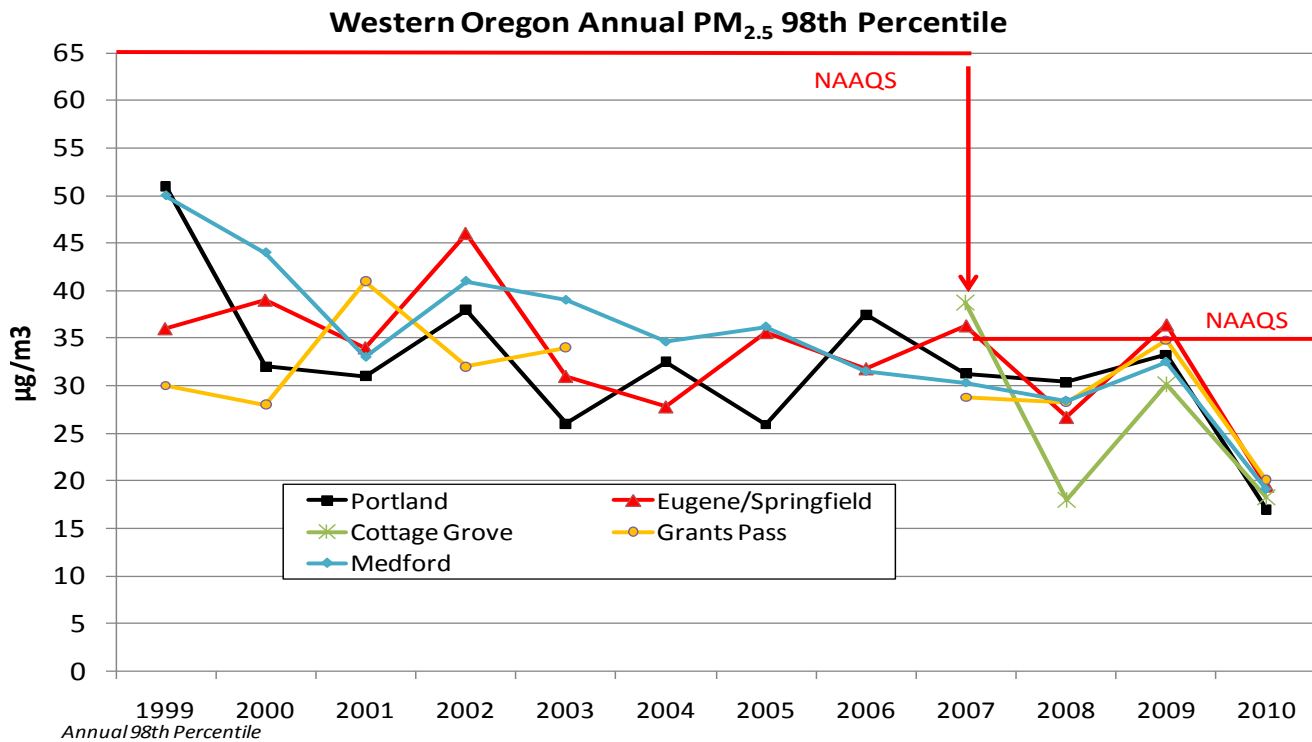


Figure 5. Annual 98th percentile PM_{2.5} trend chart for Western Oregon.

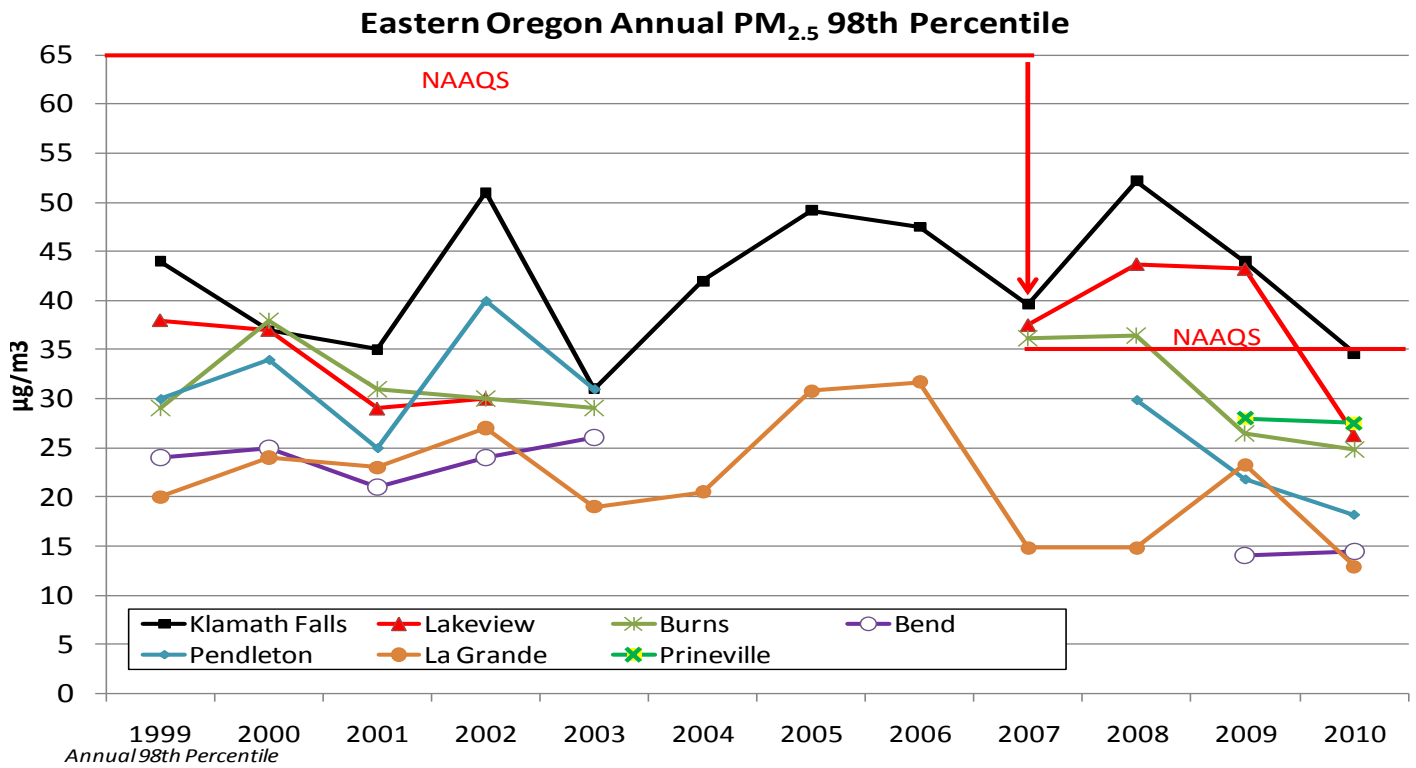


Figure 6. Annual 98th percentile PM_{2.5} trend chart for Eastern Oregon.

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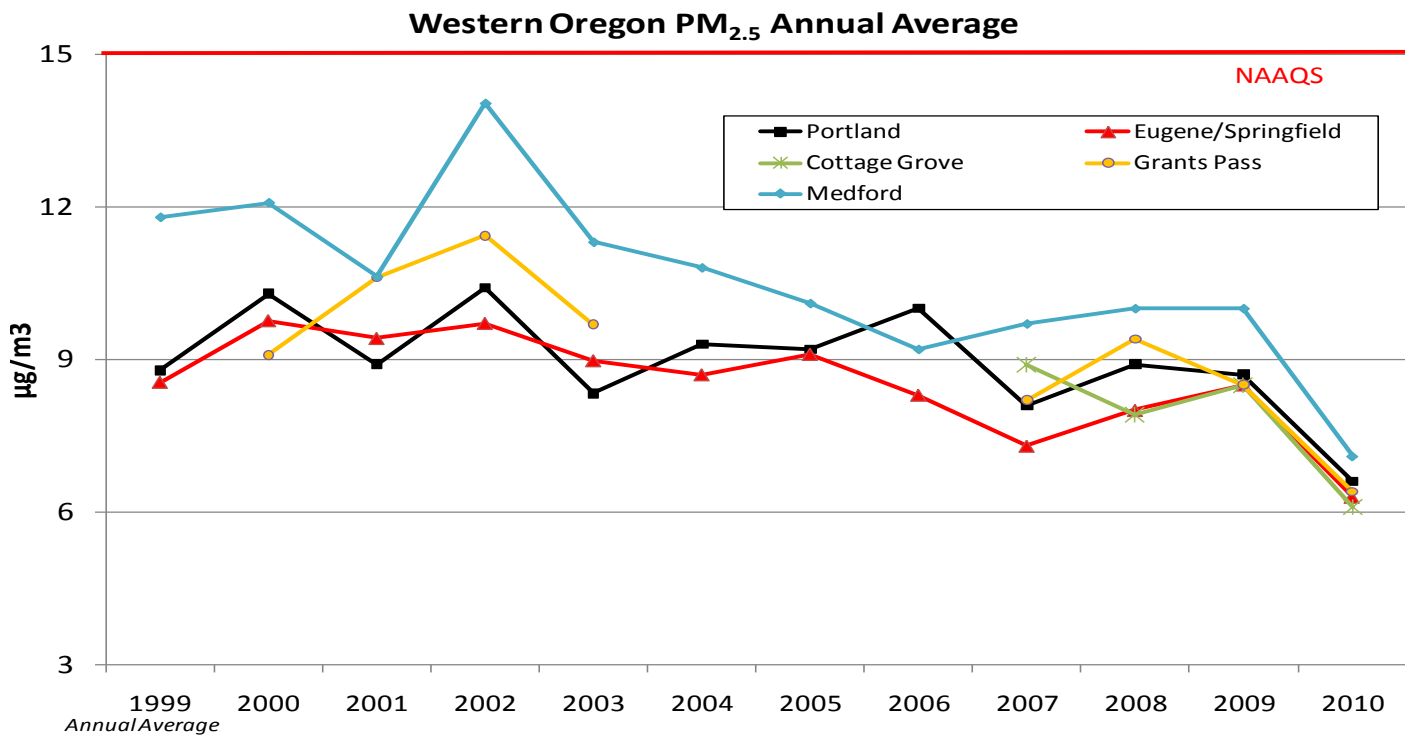


Figure 7. Annual Average percentile PM_{2.5} trend chart for Western Oregon.

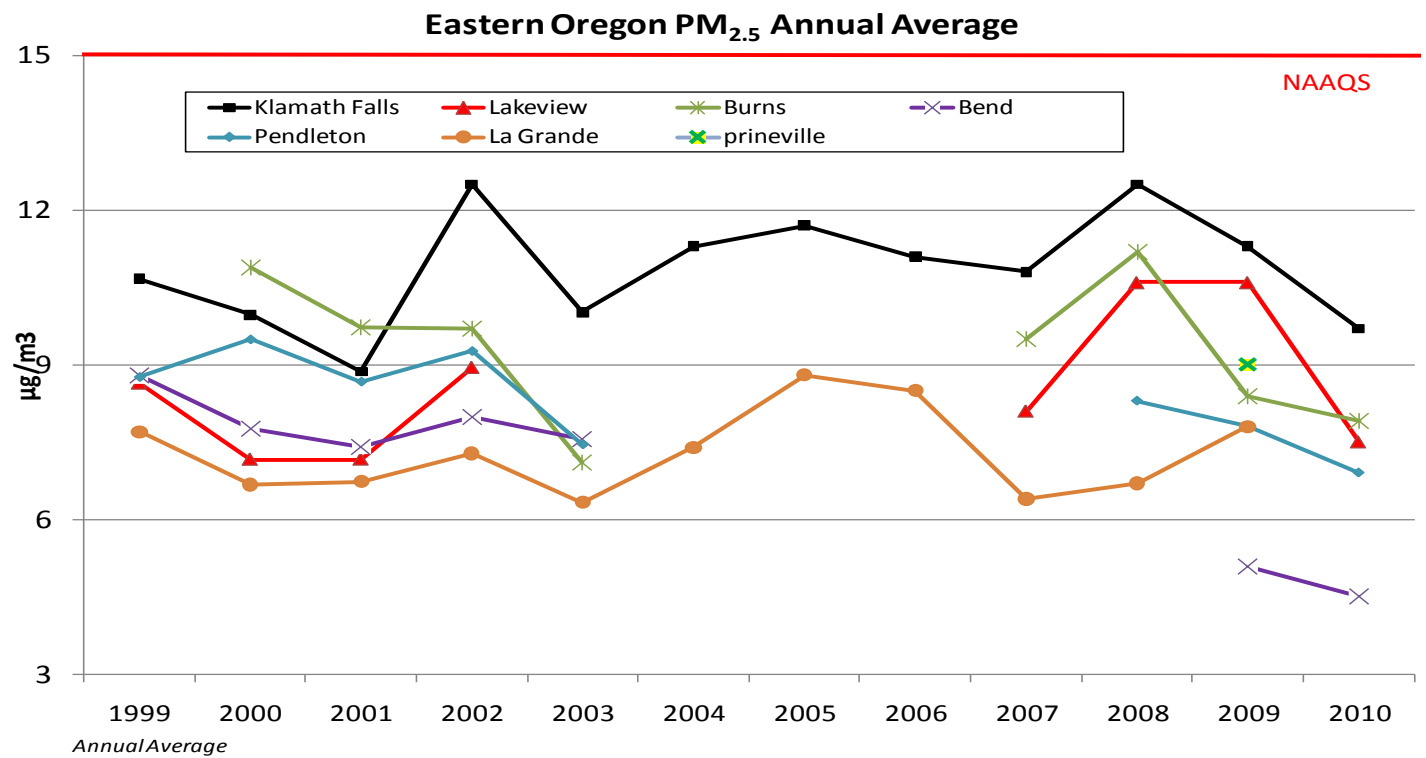


Figure 8. Annual Average percentile PM_{2.5} trend chart for Eastern Oregon.

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Network:

Oregon meets the SLAMS/NCORE requirements in 40 CFR Part 58, Appendix D (2.8 & 3.7). Table 2 and Figure 9 show the Oregon's PM_{2.5} Federal Reference Method sampler network used for NAAQS compliance. These are filter based samplers and are not used to calculate the AQI. Tables 3 lists the PM_{2.5} estimate network used to calculate the AQI.

Note: The FRM samplers are collocated with the visibility monitors (nephelometers) to provide correlation equations. These equations are used to convert visibility into to PM_{2.5} estimates.

Table 2. PM_{2.5} Federal Reference Method Network.

| EPA # | City/Name | Method | Project Type | Project Objective | Meas. Scale | Frequency & Monitor type | | comments |
|-----------|--------------------------|--------|--------------|-------------------|-------------|--------------------------|-------------|--------------------|
| 410130100 | Prineville/Davidson Park | 118 | SLAMS | Population | Nghbr | 1/3 | Prim | 1/6 to 1/3 |
| 410170120 | Bend/Pump Station | 118 | SLAMS | Population | Nghbr | 1/6 | Prim | Discontinued |
| 410250003 | Burns/Washington St. | 118 | SLAMS | Population | Nghbr | 1/3 | Prim | |
| 410291001 | Uninc./Dodge Road | 118 | SLAMS | Transport | Rural | 1/6 | Prim | Discontinued |
| 410290133 | Medford/Grant & Belmont | 118 | SLAMS | Population | Nghbr | 1/3 1/12 | Prim Dup | |
| 410330114 | Grants Pass/ ParksideSch | 118 | SLAMS | Population | Nghbr | 1/6 | Prim | |
| 410350004 | K.Falls/Peterson Sch. | 118 | SLAMS | Population | Nghbr | 1/3 | Prim | |
| 410370001 | Lakeview/ Center & M | 118 | SLAMS | Population | Nghbr | 1/3 | Prim | |
| 410390058 | Eugene/Key Bank | 118 | SLAMS | Population | Nghbr | 1/3 | Prim | |
| 410390060 | Eugene/AmazonPark | 118 | SLAMS | Population | Nghbr | 1/1 1/12 | Prim Dup | |
| 410391009 | Springfield/City Hall | 118 | Special | Population | Nghbr | 1/6 | Prim | Changed from SLAMS |
| 410399003 | Cottage Grove/City Shop | 118 | SLAMS | Population | Nghbr | 1/3 | Prim | |
| 410392013 | Oakridge/WillametteCntr | 118 | SLAMS | Population | Nghbr | 1/3 | Prim | |
| 410472002 | Sweet Home FD | 118 | SLAMS | Population | Nghbr | 1/3 | Prim | Installed |
| 410510080 | Portland/SE Lafayette | 118 | NCORE | Population | Nghbr | 1/3 | Prim | |
| 410510245 | Portland/N Roselawn | 118 | SLAMS | Population | Nghbr | 1/6 | Prim | Discontinued |
| 410610119 | La Grande/Ash St | 117 | SLAMS | Population | Nghbr | 1/6 | Prim | Discontinued |
| 410590121 | Pendleton/McKay Crk | 118 | SLAMS | Population | Nghbr | 1/6 | Prim | |
| 410670004 | Hillsboro/Hare Field | 118 | SLAMS | Population | Nghbr | 1/3 | Prim | |
| 410670004 | Hillsboro/Hare Field | 118 | SLAMS | Population | Nghbr | 1/12 | Dup | Ran for 9 months |

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2011 Oregon PM_{2.5} NAAQS Compliance Surveillance Network

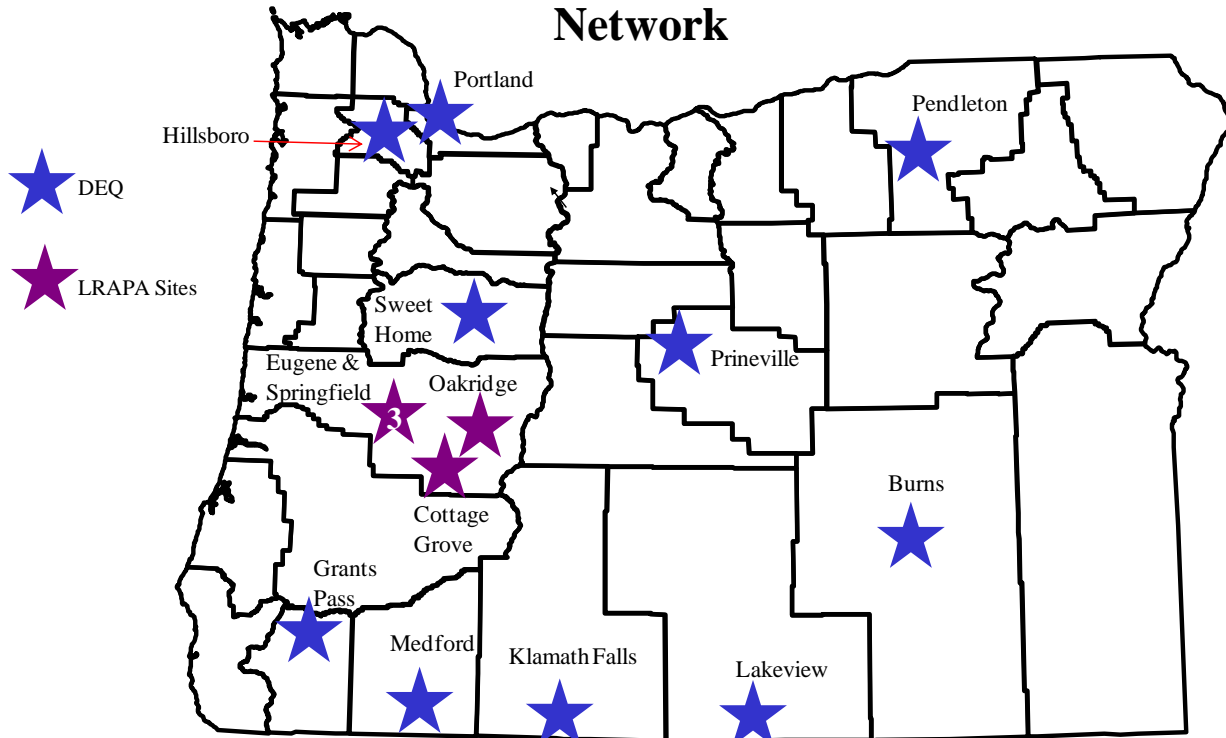


Figure 9. July 2010 to June 2011 Oregon PM_{2.5} Federal Reference Method Network.

The Portland-N. Roselawn, Medford-Dodge Rd., Bend, and La Grande samplers were removed in late 2010.

4.2.1 PM_{2.5} Continuous Network

The PM_{2.5} continuous network is comprised of RadianceTM nephelometers. All Federal Reference Method PM_{2.5} filter samplers are co-located with nephs. The nephelometers are correlated to the filter samplers and provide real time data resolved to as low as one second intervals. The PM_{2.5} calculated from the nephelometers is estimated and is used for informational purposes and not for official comparison to the NAAQS. Table 3 and Figure 10 show the continuous PM_{2.5} network used for the AQI.

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Table 3. PM_{2.5}continuous monitoring network.

| AIRS # | City/Site Name | Measurement Scale | Monitoring Type | Sampling Frequency |
|-----------|----------------------------|-------------------|-----------------|--------------------|
| 410090004 | Portland/Sauvie Island | Regional | Slams | Summer |
| 410170120 | Bend/Pump Station | Neighborhood | Slams | Annual |
| 410130100 | Prineville/Davidson Park | Neighborhood | Slams | Annual |
| 410250002 | Burns/ Madison St. | Neighborhood | Slams | Annual |
| 410290133 | Medford/Grant & Belmont | Neighborhood | Slams | Annual |
| 410310007 | Madras/Westside Sch | Neighborhood | Slams | Annual |
| 410330114 | Grants Pass/Parkside Sch | Neighborhood | Slams | Annual |
| 410350004 | Klamath Falls/Petersen Sch | Neighborhood | Slams | Annual |
| 410350015 | S. of Klamath Falls | Neighborhood | Slams | Discontinued |
| 410370001 | Lakeview/Center & M | Neighborhood | Slams | Annual |
| 410390013 | Eugene/LCC | Neighborhood | Slams | Annual |
| 410390060 | Eugene/Amazon Park | Neighborhood | Slams | Annual |
| 410392013 | Oakridge/Willamette Cntr | Neighborhood | Slams | Annual |
| 410399004 | Cottage Grove/City Shops | Neighborhood | Slams | Annual |
| 410430009 | Albany/Calapooia School | Neighborhood | Slams | Annual |
| 410432002 | Sweet Home/Fire Station | Neighborhood | Slams | Annual |
| 410470041 | Salem/State Hospital | Neighborhood | Slams | Annual |
| 410510080 | Portland/SE Lafayette | Neighborhood | NCore | Annual |
| 410510246 | Portland/N. Roselawn | Neighborhood | Slams | Annual |
| 410590121 | Pendleton/McKay Creek | Neighborhood | Slams | Annual |
| 410650007 | The Dalles/ Cherry Heights | Neighborhood | Slams | Annual |
| 410610119 | La Grande/ Ash St. | Neighborhood | Slams | Annual |
| 410670004 | Hillsboro Hare Field | Neighborhood | Slams | Annual |
| 410670111 | Beaverton/Highland Park | Neighborhood | Slams | Annual |
| 410711002 | McMinnville/Newby Sch | Neighborhood | Slams | Annual |

For all sites: The sampling method is 011, The Project Type is PM continuous, and The Objective is PM Surrogate.

This table does not include the Visibility, Field Burning and Forest Health monitors. See sections 4.10 – 4.12.

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2011 Oregon Real Time Neph PM Air Quality Surveillance Network

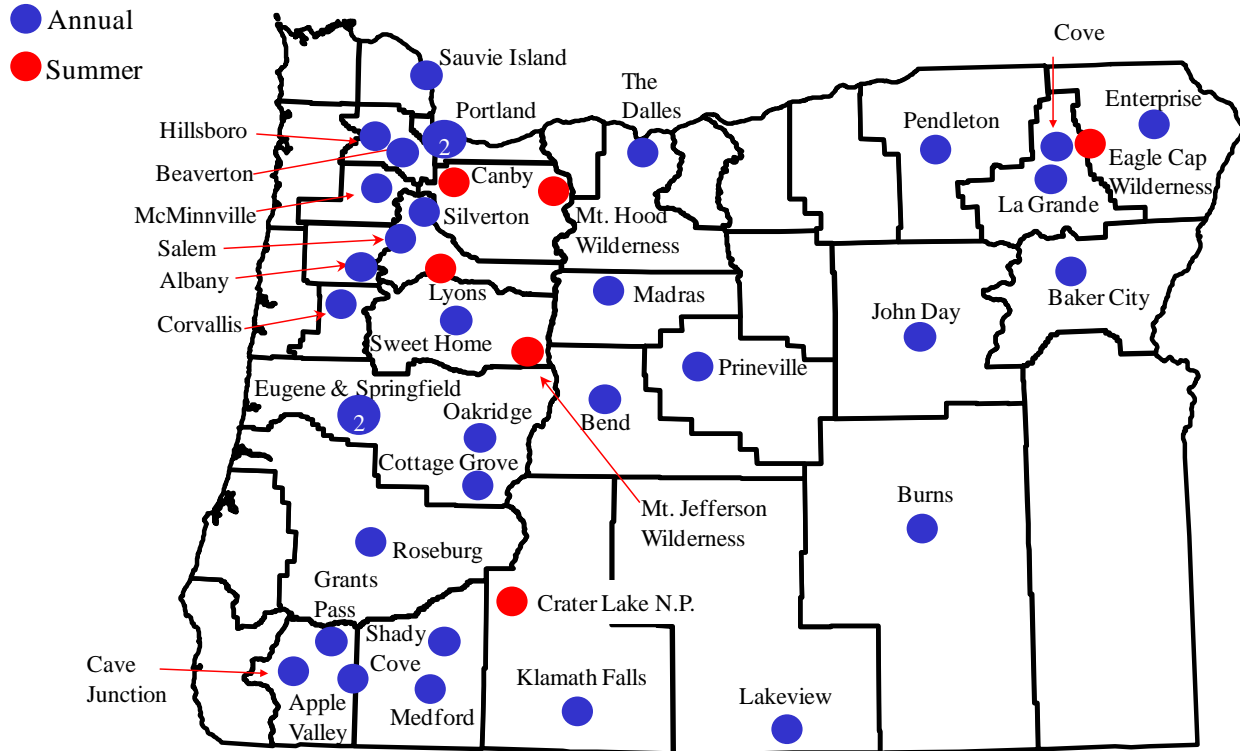


Figure 10. July 2010 to June 2011 Oregon PM_{2.5} Continuous Network used for the AQI. This figure includes the locations of Visibility, Forest Health, and Field Burning sites. The Klamath Falls background site shutdown in mid 2010.

4.2.2 PM_{2.5} Speciation

PM_{2.5} can be comprised of metal, carbonaceous material, aerosols, or other compounds. Speciation helps identify the type of particulate so ODEQ staff can better understand its emission source. ODEQ is operating PM_{2.5} Speciation samplers at four cities listed in Table 4 and shown in Figure 11.

Table 4. PM_{2.5} Speciation Network.

| EPA # | Site Name | Project Type | Project Objective | Measurement Scale | Operating Sampling Frequency | | Analysis by |
|-----------|-------------------------------|--------------|-------------------|-------------------|------------------------------|--------|-------------|
| 410370001 | Lakeview/Center and M | Special | Population | Nghbr | 1/6 | Annual | ODEQ |
| 410392013 | Oakridge/Willamette Center | Special | Population | Nghbr | 1/6 | Annual | ODEQ |
| 410510080 | Portland/SE Lafayette | NCORE | Population | Nghbr | 1/3 | Annual | RTI |
| 410510119 | Klamath Falls/Peterson School | Special | Population | Nghbr | 1/6 | Annual | ODEQ |

Sampling and Analysis Method For All Sites:

- 810 – Met One SASS with Gravimetric, 811 – Met One SASS with ICP/MS,
- 812 – Met One SASS Nylon with Ion Chromatography,
- URG Quartz with EC1+EC2+EC3+OP & OC1+OC2+OC3+OC4+OP

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2011 Oregon PM_{2.5} Speciation Surveillance Network

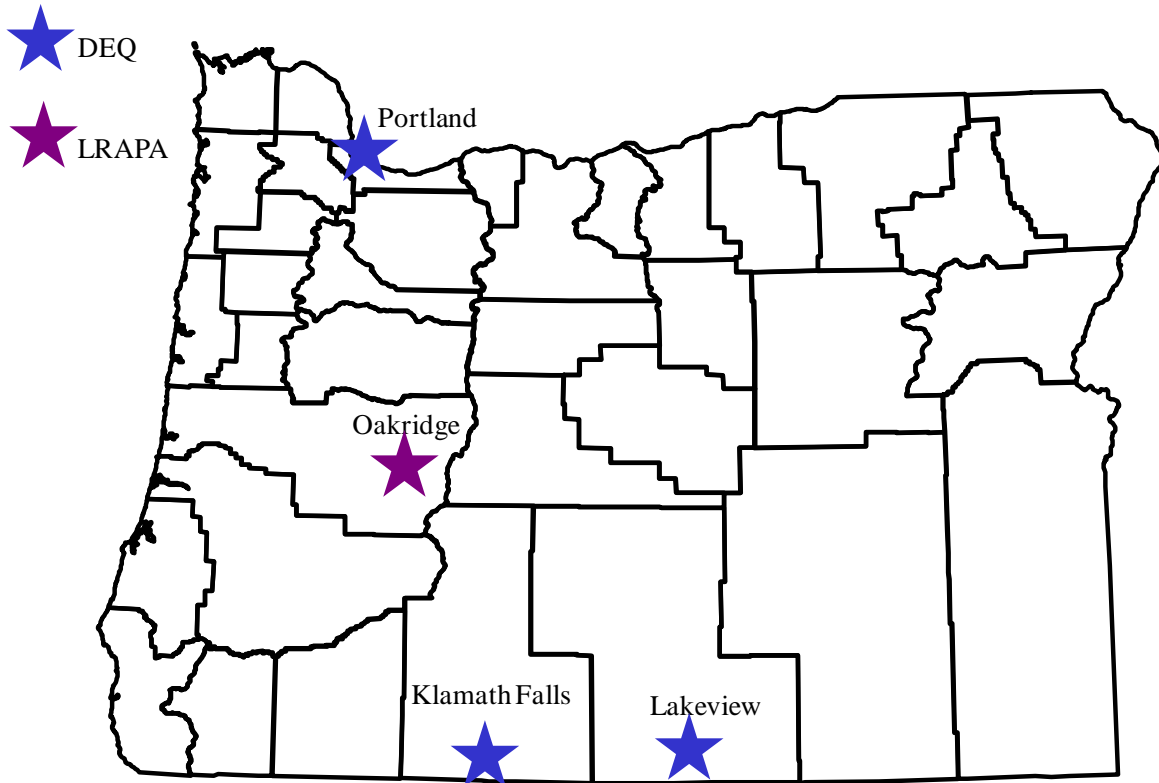


Figure 11. July 2010 to June 2011 Oregon PM_{2.5} Speciation Network.

4.3 Sulfur Dioxide (SO₂, EPA pollutant #42401)

There is one SO₂ monitor in Oregon, as listed in Table 5 and shown in Figure 15. The Portland NCore site uses a trace gas monitor. The trace gas monitor can detect very low levels that would not be measured as accurately by a conventional monitor.

Table 5. Oregon SO₂ Monitoring Sites.

| EPA # | City/Name | Assessment Method | Project Type | Site Purpose | Scale | Sampling Frequency |
|-----------|-----------------------|-------------------|--------------|--------------|-------|--------------------|
| 410510080 | Portland/SE Lafayette | 592 | NCore | Population | Trace | Annual |

4.4 Nitrogen Dioxide (NO₂, 42602) and (NO_y, 42600, NO_z, 42612)

The only NO₂ and NO_{y/z} monitors in Oregon are at the NCore site (listed Table 6 and shown in Figure 15).

Table 6. Oregon NO_x and NO_y Monitoring Sites.

| Monitor type | EPA # | City/Name | Assessment Method | Project Type | Site Purpose | Scale | Sampling Frequency |
|-----------------|-----------|-----------------------|-------------------|--------------|--------------|-------|--------------------|
| NO _x | 410510080 | Portland/SE Lafayette | 074 | NCore | Population | Nghbr | Annual |
| NO _y | 410510080 | Portland/SE Lafayette | 591 | NCore | Population | Nghbr | Annual |
| NO _z | 410510080 | Portland/SE Lafayette | 591 | NCore | Population | Nghbr | Annual |

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4.5 Carbon Monoxide (CO, EPA pollutant #42101)

Trends

CO has stabilized at around 2ppm over the past three years. Figure 12 shows the CO trend for Oregon.

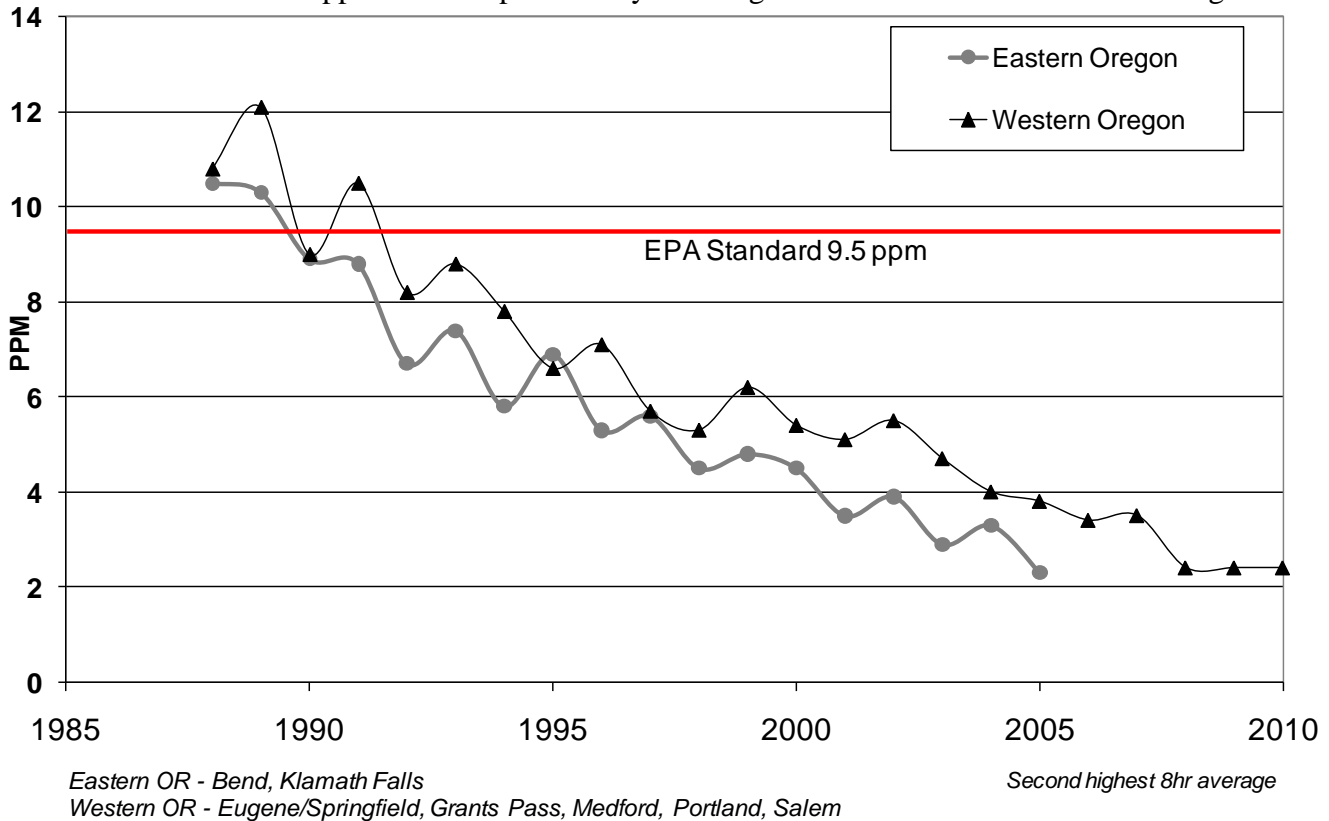


Figure 12. CO Trend chart.

The second highest eight hour average CO levels for Oregon.

Network

ODEQ shut down the Portland, SW 3rd Avenue (41-051-0087) and Medford, Rogue Valley Mall (41-029-0018) sites due to resource constraints and very low design values. LRAPA shut down Eugene Lane Community College (41-039-0013) for the same reasons. ODEQ continues to perform statewide emission inventories for CO. ODEQ operates a trace level CO monitor at SE Lafayette, as required at our National Core (NCORE) site. The sites are listed in Table 7 and shown in Figure 15.

Table 7. Oregon Carbon Monoxide Monitoring Sites.

| AQS Site # | Name/City | Method | Project Type | Site Purpose | Scale | Sampling Frequency | Comment |
|------------|---------------------------|--------|--------------|---------------|-------|--------------------|--------------|
| 410290018 | Medford/Rogue Valley Mall | 066 | SLAMS | Concentration | Micro | Annual | Discontinued |
| 410390013 | Eugene/Lane Com Col | 066 | SLAMS | Concentration | Micro | Annual | Discontinued |
| 410510080 | Portland/SE Lafayette | 588 | NCORE | Population | Trace | Annual | |
| 410510087 | Portland/Postal Bldg | 093 | SLAMS | Concentration | Micro | Annual | Discontinued |

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4.6 Ozone (O₃, 44201)

Trends:

Ozone is trending down on average since 1991. Figure 13 shows the three year average of the fourth highest daily maximum eight hour average trends for all cities monitored except Bend which only has two years of data. Figure 14 shows the 2008-2010 data.

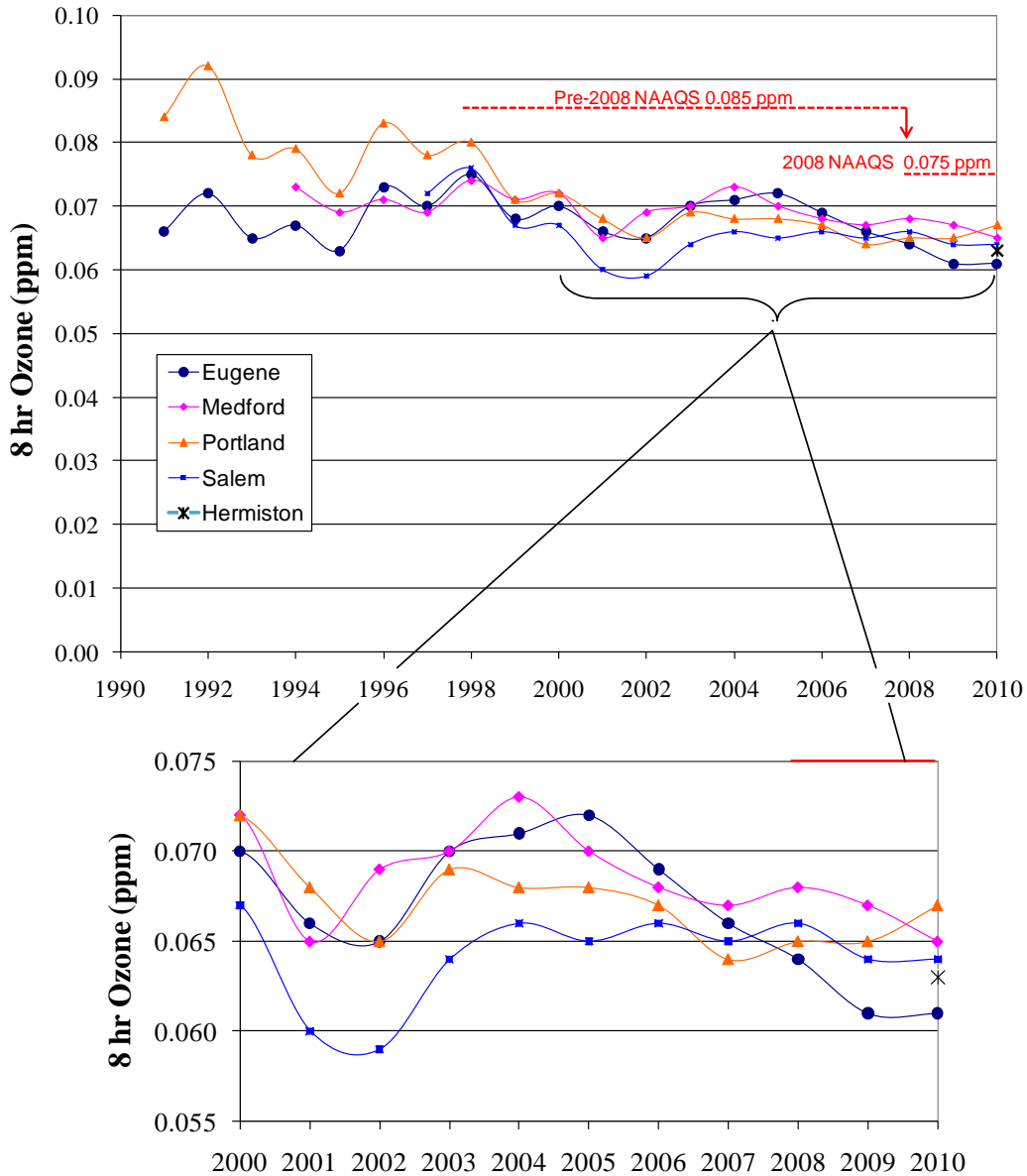
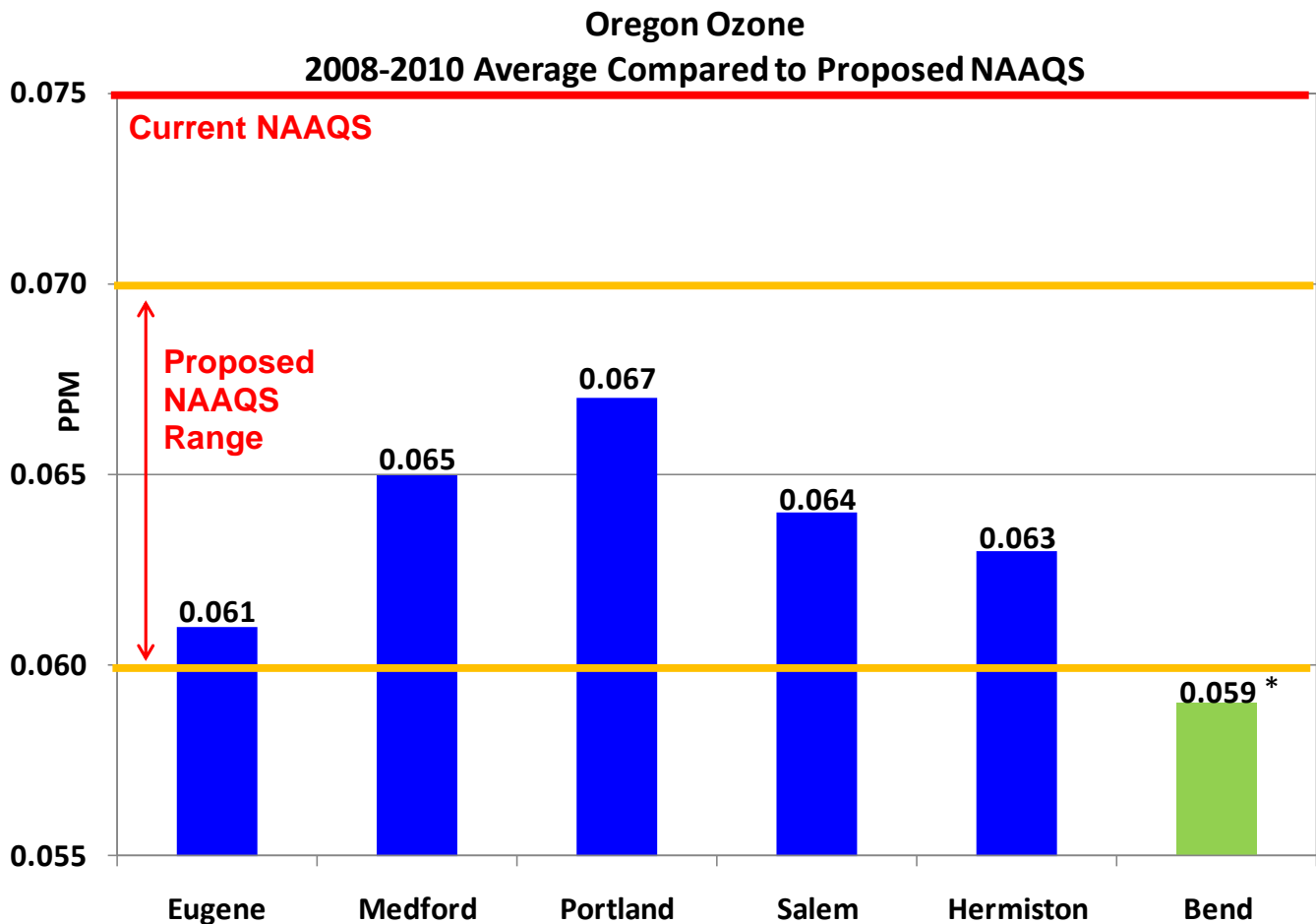


Figure 13. Comparison of the 2008-2010 three year average ozone levels to the NAAQS.

Note: A NAAQS violation occurs when the 3rd year average of the 4th highest 8 hour average exceeds 0.075 ppm.

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Three Year Average of Fourth Highest Eight Hour Average

**Only two yrs of data*

Figure 14. Oregon ozone 2008-2010 levels in comparison to the current and proposed NAAQS.

Network:

ODEQ operates ozone monitors in the Portland area, Medford, Salem, Bend, and Hermiston. LRAPA operates ozone monitors for the Eugene/Springfield area. Table 8 lists all of Oregon's ozone sites and Figure 15 shows the locations.

Table 8. Oregon Ozone Monitoring Sites.

| EPA # | City/Name | Assessment Method | Project Type | Site Purpose | Scale | Sampling Frequency |
|-----------|-----------------------|-------------------|--------------|--------------|-------|--------------------|
| 410170122 | Bend/Road Dept. | 019 | SLAMS | Max Conc. | Urban | May –Sep |
| 410050004 | Portland/Carus | 019 | SLAMS | Max Conc. | Urban | May –Sep |
| 410671004 | Portland/ Sherwood | 019 | SLAMS | Population | Urban | May –Sep |
| 410090004 | Portland/Sauvie Is. | 019 | SLAMS | Transport | Urban | May –Sep |
| 410290201 | Talent/Rapp Ln | 019 | SLAMS | Max Conc. | Nghbr | May –Sep |
| 410390060 | Eugene/Amazon Prk | 019 | SLAMS | Population | Nghbr | May –Sep |
| 410391007 | Saginaw/Delight Rd | 019 | SLAMS | Max conc. | Urban | May –Sep |
| 410470004 | Turner/Cascade JHS | 019 | SLAMS | Max Conc. | Nghbr | May –Sep |
| 410510080 | Portland/SE Lafayette | 019 | NCORE | NCore | Urban | Annual |

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| | | | | | | |
|-----------|-------------------|-----|---------|------------|-------|----------|
| 410591003 | Hermiston/Airport | 019 | Special | Population | Rural | May –Sep |
|-----------|-------------------|-----|---------|------------|-------|----------|

2011 DEQ & LRAPA Real Time Gas Air Quality Surveillance Network

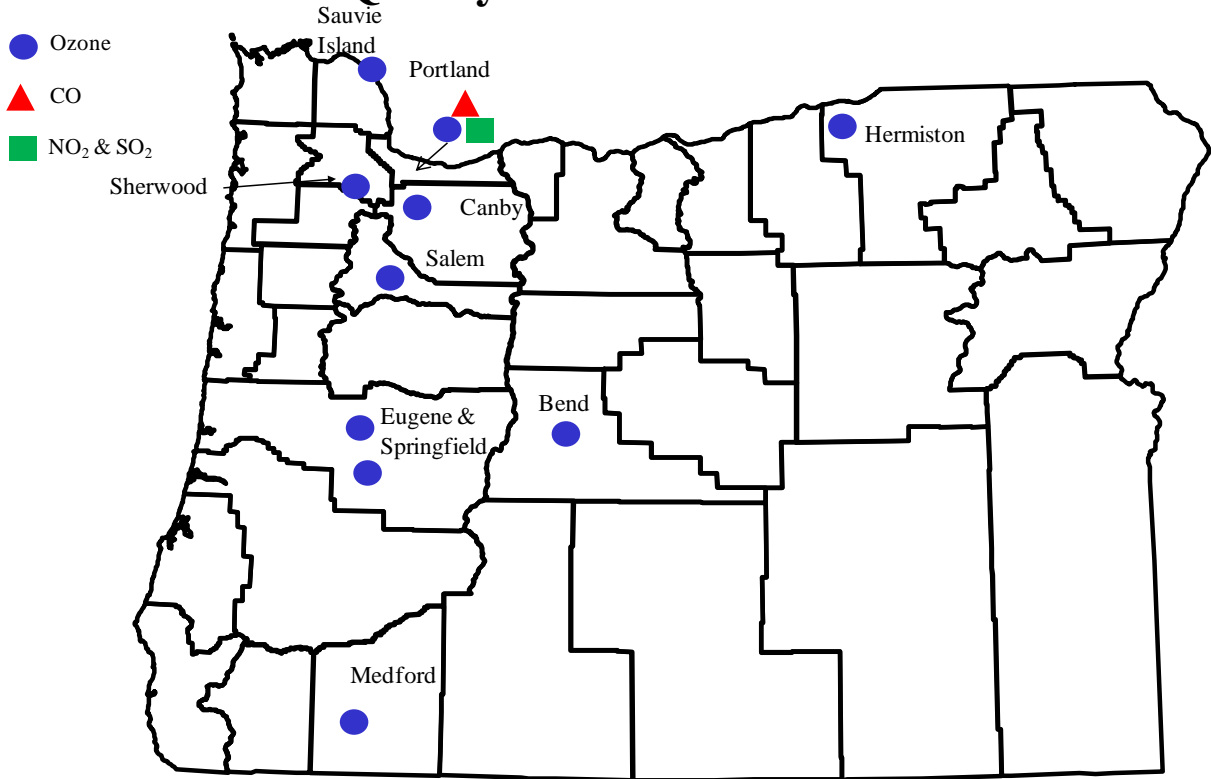


Figure 15. July 2010 to June 2011 Ozone, CO, NO₂, and SO₂ monitoring sites.

4.7 Lead (Pb, EPA pollutant #12128)

ODEQ has one TSP lead monitor at McMinnville – Highway 99W & Riverside Road outside of Cascade Steel Rolling Mill’s fence line. The site is listed in Table 9 and shown in Figure 16.

Table 9. Oregon TSP Lead Network.

| AQS Site # | City/Name | Assessment Method | Project Type | Site Purpose | Scale | Sampling Frequency |
|------------|--------------------------|-------------------|--------------|--------------|-------|--------------------|
| 410711702 | McMinnville/Riverside Rd | 043 | SLAMS | Max Conc. | Micro | 1 in 6 |

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4.8 Hazardous Air Pollutants (Air Toxics)

Trends

Over the past several years ODEQ and LRAPA have operated air toxics monitoring stations in a number of cities. The number of sites in each community is shown in Table 10:

Table 10. Number of Air Toxics sites by city from 1999 to present.

| | Pdx Metro Area | Vancouver, WA | Eugene | La Grande | Medford | Salem | Klamath Falls |
|------|----------------|---------------|--------|-----------|---------|-------|---------------|
| 1999 | 5 | | | | | | |
| 2000 | 2 | 1 | | | | | |
| 2001 | 1 | | | | | | |
| 2002 | 1 | | 1 | | | | |
| 2003 | 1 | | 1 | | | | |
| 2004 | 3 | | 1 | 1 | | | |
| 2005 | 5 | 1 | 1 | 1 | | | |
| 2006 | 1 | | 1 | 1 | | | |
| 2007 | 2 | | 1 | 1 | | | |
| 2008 | 2 | | 1 | 1 | 2 | | |
| 2009 | 1 | | 1 | | 1 | 1 | |
| 2010 | 1 | | 2 | 1 | 1 | 1 | 1 |
| 2011 | 1 | | 2 | 1 | 1 | | 1 |

EPA lists 188 Hazardous Air Pollutants (HAPS) or air toxics in the Clean Air Act Amendments of 1990. Of these EPA identifies 33 urban HAPS which it considers to pose the greatest risk to public health in urban areas. The EPA Urban HAPS list is discussed at <http://www.epa.gov/ttn/atw/urban/list33.html>. ODEQ revised this list to include 20 HAPS of concern in Oregon, shown in Table 11.

Table 11. Hazardous Air Pollutants of Concern in Oregon.

| Carbonyls | Volatile Organic Compounds | Metals |
|--------------|---------------------------------|----------------------------------|
| Acetaldehyde | 1, 1, 2, 2, Tetrachloroethylene | Arsenic and Compounds |
| Formaldehyde | 1,3-Butadiene | Cadmium |
| | Acrolein | Chromium and Compounds |
| | Benzene | Lead |
| | Carbon Tetrachloride | Manganese |
| | Chloroform | Nickel |
| | p-Dichlorobenzene | Polycyclic Aromatic Hydrocarbons |
| | Ethylbenzene | 15 PAHS |
| | Methylene chloride | Naphthalene |
| | Tetrachloroethylene (Perc) | Particulates |
| | Trichloroethylene | Diesel Particulate Matter |
| | Vinyl Chloride | |

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Currently ODEQ analyzes for the compounds in Table 11 except diesel particulate. No method is currently available to accurately measure diesel PM. ODEQ does monitor for black carbon at two sites using an Aethalometer. Black carbon is a component of diesel particulate and can be used as a surrogate. ODEQ analyzes for 104 compounds in the HAPS program, a complete list is available in Appendix A. Recently ODEQ started analyzing VOC samples for acrolein.

Network

DEQ currently operates air toxic sites in Portland, Klamath Falls, Medford, and La Grande. LRAPA operates two sites in Eugene. The sites are listed in Table 12 and shown in Figure 16.

Table 12. Current Hazardous Air Pollutants (Air Toxics) Network.

| AIRS # | City/Name | Assessment Method | Project Type | Project Objective | Meas. Scale | Sampling Frequency | | Comments |
|-----------|--------------------------------|--------------------|--------------|-------------------|-------------|--------------------|--------|-------------------------|
| 410290133 | Medford Grant and Belmont | 110, 114, 089, 117 | Special | Population | Nghbr | 1/6 | Annual | |
| 410350004 | Klamath Falls, Peterson School | 110, 114, 089, 117 | Special | Population | Nghbr | 1/6 | Annual | Started Oct., 2010 |
| 410390060 | Eugene/Amazon Park | 110, 114, 089, 117 | Special | Population | Nghbr | 1/6 | Annual | Ending May 2011 |
| 410390062 | Eugene/Peterson Park | 110, 114, 089, 117 | Special | Population | Nghbr | 1/6 | Annual | Ending May 2011 |
| 410470041 | Salem/State Hospital | 110, 114, 089, 117 | Special | Population | Nghbr | 1/6 | Annual | Discontinued July, 2010 |
| 410510246 | Portland/N Roselawn | 110, 114, 089, 117 | NCORE/Trends | Population | Nghbr | 1/6 | Annual | |
| 410610119 | La Grande/Ash St. | 110, 114, 089, 117 | Trend Site | Population | Nghbr | 1/6 | Annual | |

VOC: 110 – SS- Canister-Pressurized with GCMS,
 CARBONYL: 114–Cartridge-DNPH-Silica-SEP-PAK/ HPLC photodiode Array,
 Metals: 089-PM₁₀ HV/ICP/MS Quartz Filter,
 PAH: 117–Hi PUF/GCMS TO-13

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2011 DEQ & LRAPA Air Toxics and TSP Lead Air Quality Surveillance Network

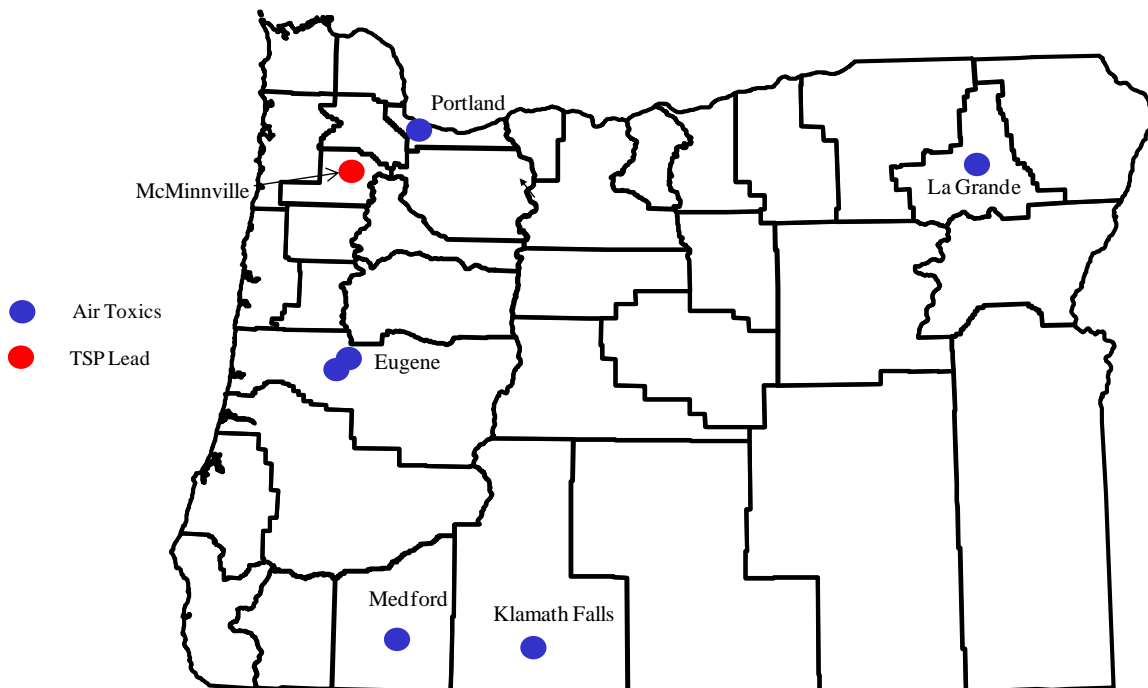


Figure 16. July 2010 to June 2011 TSP Lead and Air Toxics Sites.

4.9 Air Quality Index (Real Time Networks)

ODEQ and LRAPA report our Ozone, continuous $PM_{2.5}$, CO , NO_2 , SO_2 , and Meteorological data to EPA AIRNow hourly. ODEQ and LRAPA also report $PM_{2.5}$ and Ozone on our own Air Quality Index hourly. The Air Quality Index is a nationwide tool used to inform the public about current healthy air levels. Figure 17 shows a part of ODEQ's AQI web page. Figure 18 shows all the locations where AQI is available. ODEQ also provides all hourly and five minute continuous data to Washington State University for their AIRPACT pollution model, University of Washington for their MM-5 meteorology model, and Portland State University's Environmental School.

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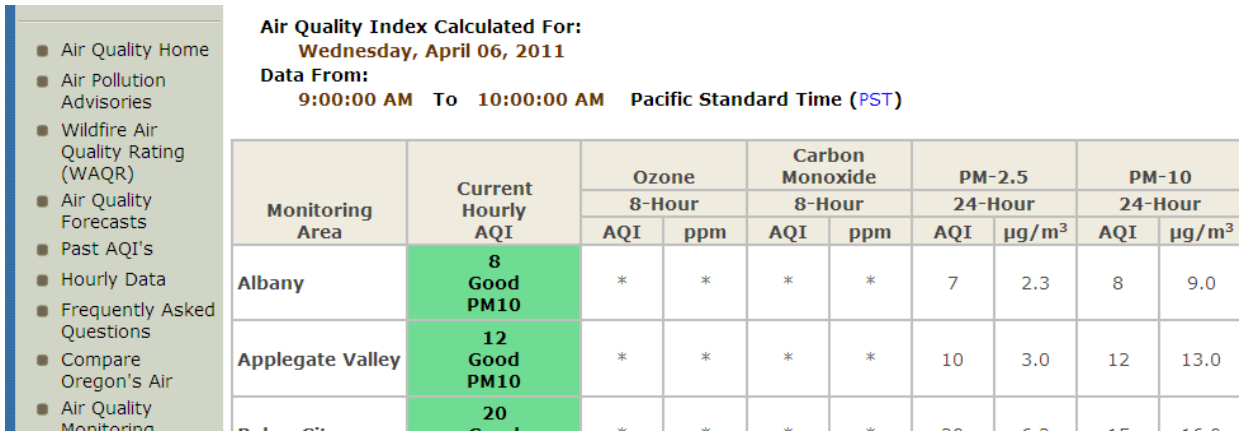


Figure 17. ODEQ's Air Quality Index (AQI) web page.

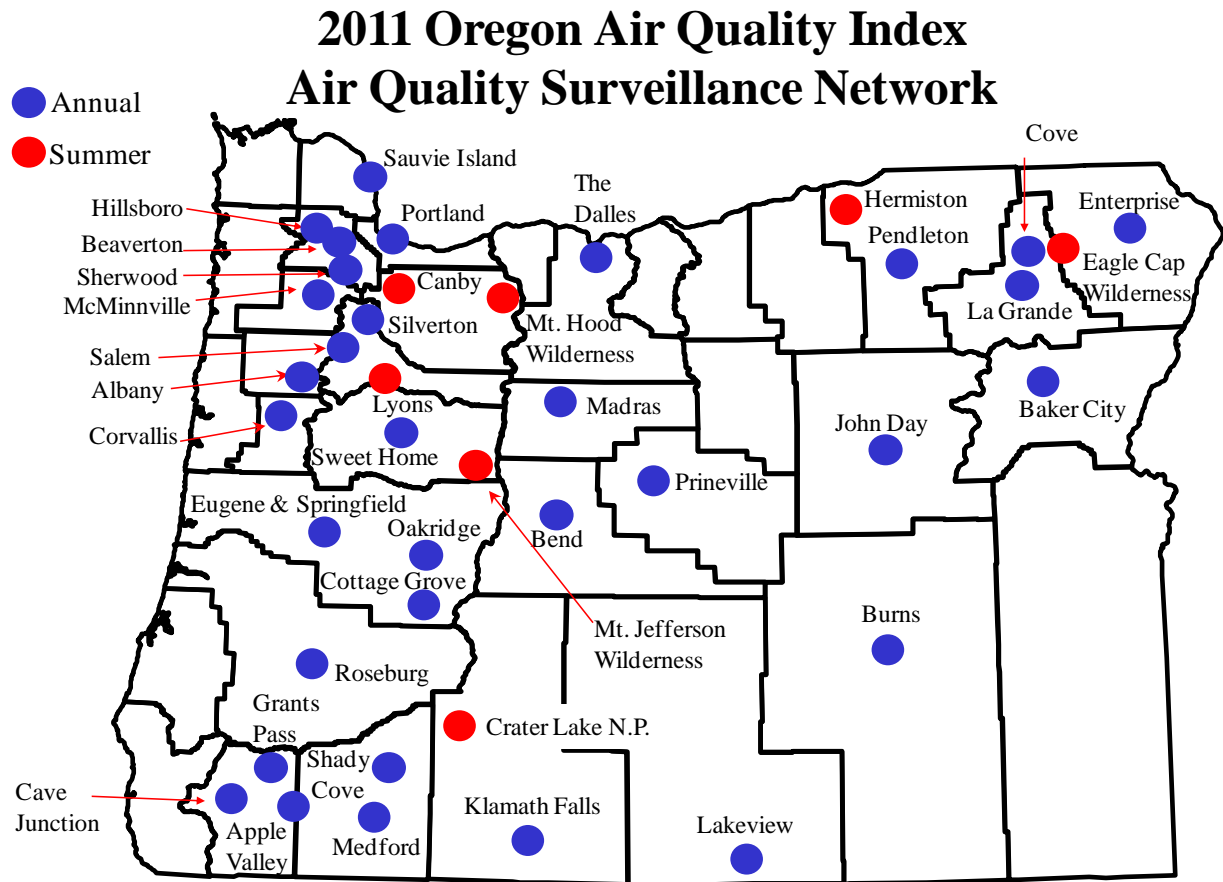


Figure 18. Locations where the Air Quality Index is available real time for July 2010 to June 2011

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4.10 Field Burning Network

ODEQ partners with the Oregon Department of Agriculture to monitor smoke impacts from Willamette Valley field burning from July through September. The sites are shown in Table 13. The field burning network consists of visibility monitors (nephelometers) and meteorology. This information is used to track the effectiveness of the Department of Agriculture's implementation of the Field Burning Smoke Management program. The visibility data is converted to PM_{2.5} estimates and is available once per hour on ODEQ's web site and uploaded to AIRNow.

ODEQ is also partnering with Union County to operate a smoke monitoring site in the Grande Ronde Valley in Cove during the summer field burning season. The Cove site provides visibility, PM_{2.5} estimates, and wind speed and wind direction.

Table 13. Field Burning monitoring network.

| EPA # | Site Name | Assessment Method | Project Objective | Measurement Scale | Sampling Frequency |
|-----------|---|-------------------|-------------------|-------------------|--------------------|
| 410050004 | Spangler Road (neph & met) | 011 | Population | Regional | July-Sept |
| 410470007 | Silverton (Neph, met, PM _{2.5}) | 011, 050, 020 | Population | Regional | Annual |
| 410470041 | Salem State Hospital (neph) | 011 | Population | Regional | July-Sept |
| None | Lyons/Marilynn School (neph) | 011 | Population | Regional | July-Sept |
| 410610120 | Cove (neph & met) | 011, 050, 020 | Population | Regional | July-Sept |

011 – Nephelometer, 020- Instrumental - Spot Reading, 050 – Instrumental – Electronic or Machine Avg.

The Cove site is funded by the Oregon Department of Agriculture and Union County (Cove).

4.11 Forest Health Network

ODEQ partners with the US Forest Service and BLM to monitor smoke impacts from prescribed burning and forest fires in the communities shown in Table 14. The forest health network consists of visibility monitors (nephelometers). This information is used to track the effectiveness of the USFS/BLM prescribed burning program and health impacts from forest fire smoke. The visibility data is converted to PM_{2.5} estimates and is available once per hour on ODEQ's web site and AIRNow.

Table 14. Forest Health monitoring network.

| EPA # | City | Assessment Method | Project Type | Project Objective | Measurement Scale | Sampling Frequency |
|-----------|-----------------|-------------------|----------------|-------------------|-------------------|--------------------|
| 410010003 | Baker City | 011 | Prescribe Burn | Population | Regional | Annual |
| 410190002 | Roseburg | 011 | Prescribe Burn | Population | Regional | Annual |
| 410230001 | John Day | 011 | Prescribe Burn | Population | Regional | Annual |
| 410250002 | Burns | 011 | Prescribe Burn | Population | Regional | Summer |
| 410290019 | Shady Cove | 011 | Prescribe Burn | Population | Regional | Annual |
| 410330010 | Illinois Valley | 011 | Prescribe Burn | Population | Regional | Annual |
| 410330011 | Provolt | 011 | Prescribe Burn | Population | Regional | Annual |
| 410330114 | Grants Pass | 011 | Prescribe Burn | Population | Regional | Summer |
| 410350004 | Klamath Falls | 011 | Prescribe Burn | Population | Regional | Summer |
| 410630001 | Enterprise | 011 | Prescribe Burn | Population | Regional | Annual |

Funded by the U.S. Forest Service and BLM (all nephelometers)

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Wildfire Air Quality Rating (WAQR)

ODEQ created a rating (index) which uses PM_{2.5} estimates to calculate health levels. The health level rating is updated hourly and includes the maximum one, eight, or 24 hour averages. The one hour average is important because a forest fire smoke plume is concentrated and can inundate an area within an hour. EPA's Air Quality Index health levels are based on 24 hour averages and do not register immediate smoke inundation. Figure 19 shows the WAQR web page.

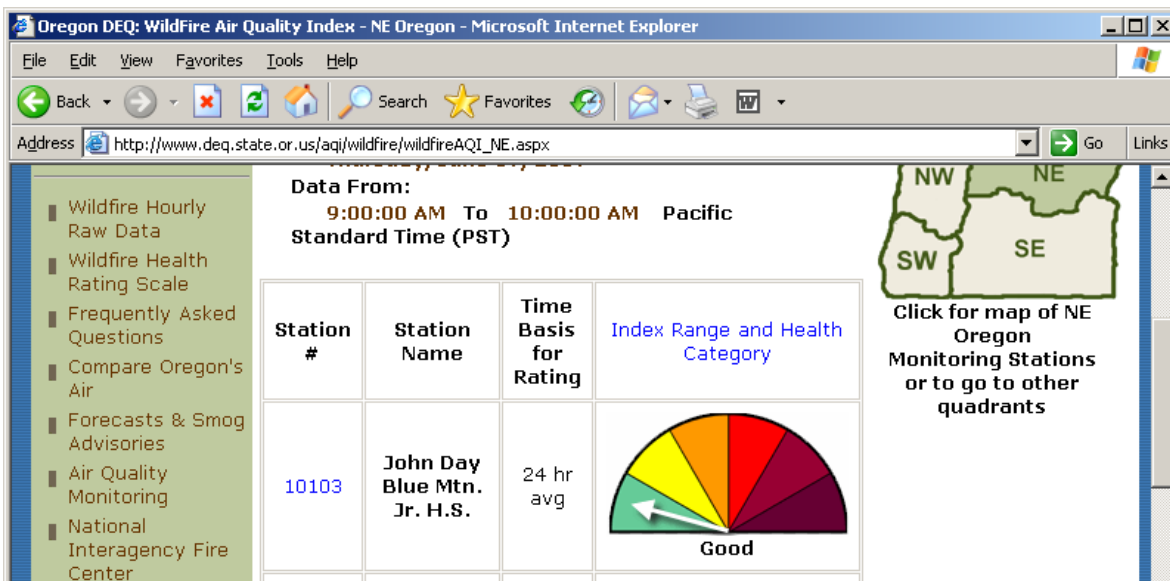


Figure 19. Wildfire Air Quality Rating (WAQR) web page.

4.12 Visibility Network

ODEQ operates a four site visibility network near pristine Class 1 areas; three in the Cascade Range and one near the Eagle Cap Wilderness in NE Oregon. Table 15 lists the visibility sites.

Table 15. Oregon Visibility Network – Neph & Met.

| AIRS # | Site Name | Assessment Method | Project Type & Objective | Measurement Scale | Sampling Frequency |
|-----------|-----------------------------------|-------------------|--------------------------|-------------------|--------------------|
| 410050102 | Mt. Hood Wilderness/Multopor | 011,050,020 | Visibility | Regional | July - Sept |
| 410351001 | Crater Lake (neph only) | 011,050,020 | Visibility | Regional | July - Sept |
| 410430103 | Mt. Jefferson Wilderness/Big Lake | 011,050,020 | Visibility | Regional | July - Sept |
| 410610121 | Eagle Cap Wilderness/Mt. Fanny | 011,050,020 | Visibility | Regional | July - Sept |

These sites operate both visibility and meteorology sensors and the data is available in the AQI and WAQR on an hourly basis.

EPA operates its own visibility network (IMPROVE) which speciates PM_{2.5} in pristine areas. These sites are listed in Table 16 and shown in Figure 20. The National Atmospheric Deposition Program is a consortium of agencies that monitor for pollutant deposition. There are six NADP sites in or next to Oregon also shown in Figure 20. NADP consists of the Mercury Deposition Network (MDN) and the National Trends Network (NTN). More information is available at <http://nadp.sws.uiuc.edu/>.

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Table 16. Non State or Local Oregon visibility sites.

| Region | Location | EPA # / IMPROVE CODE | Visl/PM _{2.5} Est. | IMPROVE | Met | MDN | NTN |
|---------------------|-----------------------------|----------------------|-----------------------------|---------|-----|-----|-----|
| Hells Canyon | Hells Canyon | | | X | | | |
| Crater Lake NP | Crater Lake | 410351001 / CRLA | X | X | | | |
| Eagle Cap Wild. | Mt. Fanny | 410610121 | X | | X | | |
| Eagle Cap Wild. | Strawberry Mt. | STAR | | X | | | |
| Kalmiopsis Wild. | Kalmiopsis | KALM | | X | | | |
| Mt Hood Wild. | Multopor | 410050102 / MOHO | X | X | X | | |
| Mt Jefferson Wild. | Big Lake/Junction | 410430103 | X | | X | | |
| Three Sisters Wild. | Three Sisters | THIS | | X | | | |
| Portland Metro | Beaverton Highland Park | 410670004/ OR01 | X | | | * | |
| Lane County | Andrews Forest, Blue River | OR10 | | | | * | X |
| Lake County | Silver Lake Ranger Station | OR09 | | | | | X |
| Benton County | Hyslop Farm, Lewisburg | OR97 | | | | | X |
| Union County | Starkey Experimental Forest | OR18 | | | | | X |
| Skamania Co., WA | Columbia River Gorge | WA98 | | | | | X |

Notes: MDN = Mercury Deposition Network. * Both the Beaverton and Andrews Forest MDN sites were discontinued at the end of 2010. They had sampled for all of 2010.

NTN = National Trends Network for wet deposition of free acidity, calcium, magnesium, sodium, potassium, sulfate, nitrate, chloride, and ammonium.

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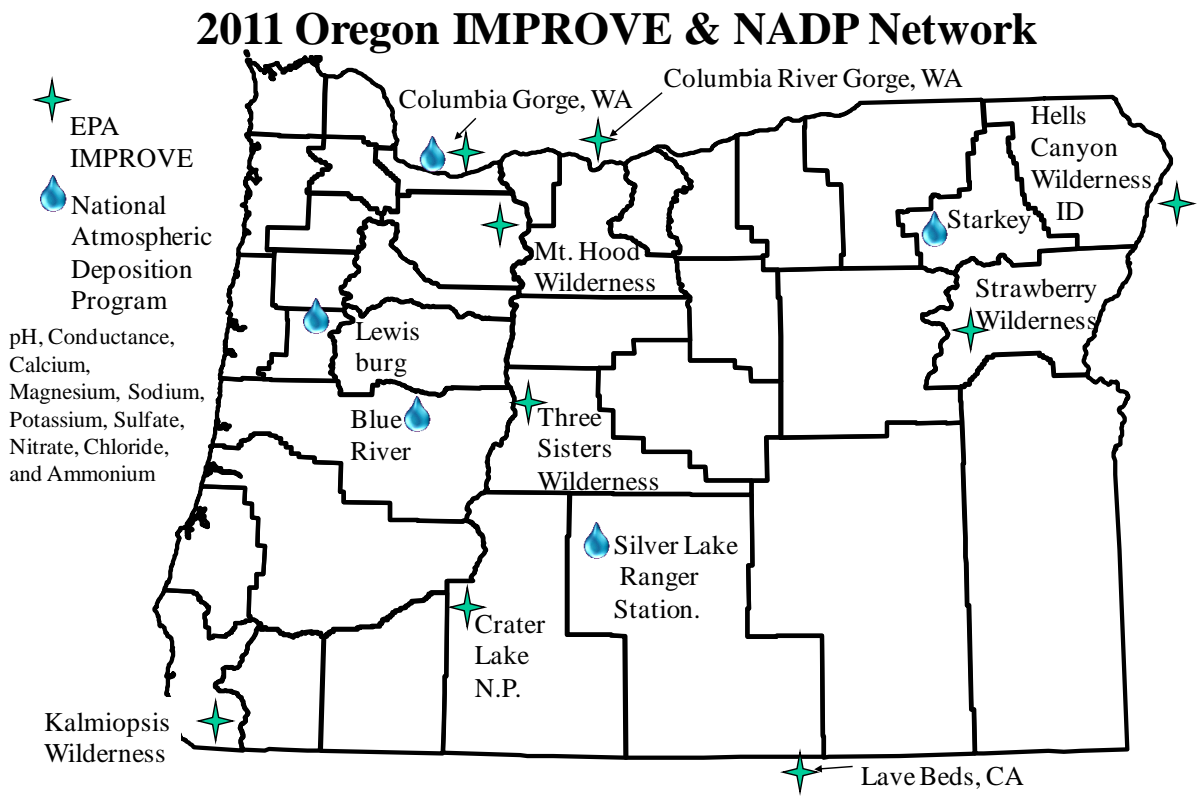


Figure 20. National Atmospheric Deposition Program and EPA IMPROVE network.

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4.13 Meteorology Network

ODEQ and LRAPA operate a meteorology network in support of ozone, PM_{2.5}, and air toxics. The network is vital in understanding the source of pollution and the impact of sources. The network is shown in Figure 21.

2011 DEQ & LRAPA Meteorology Network

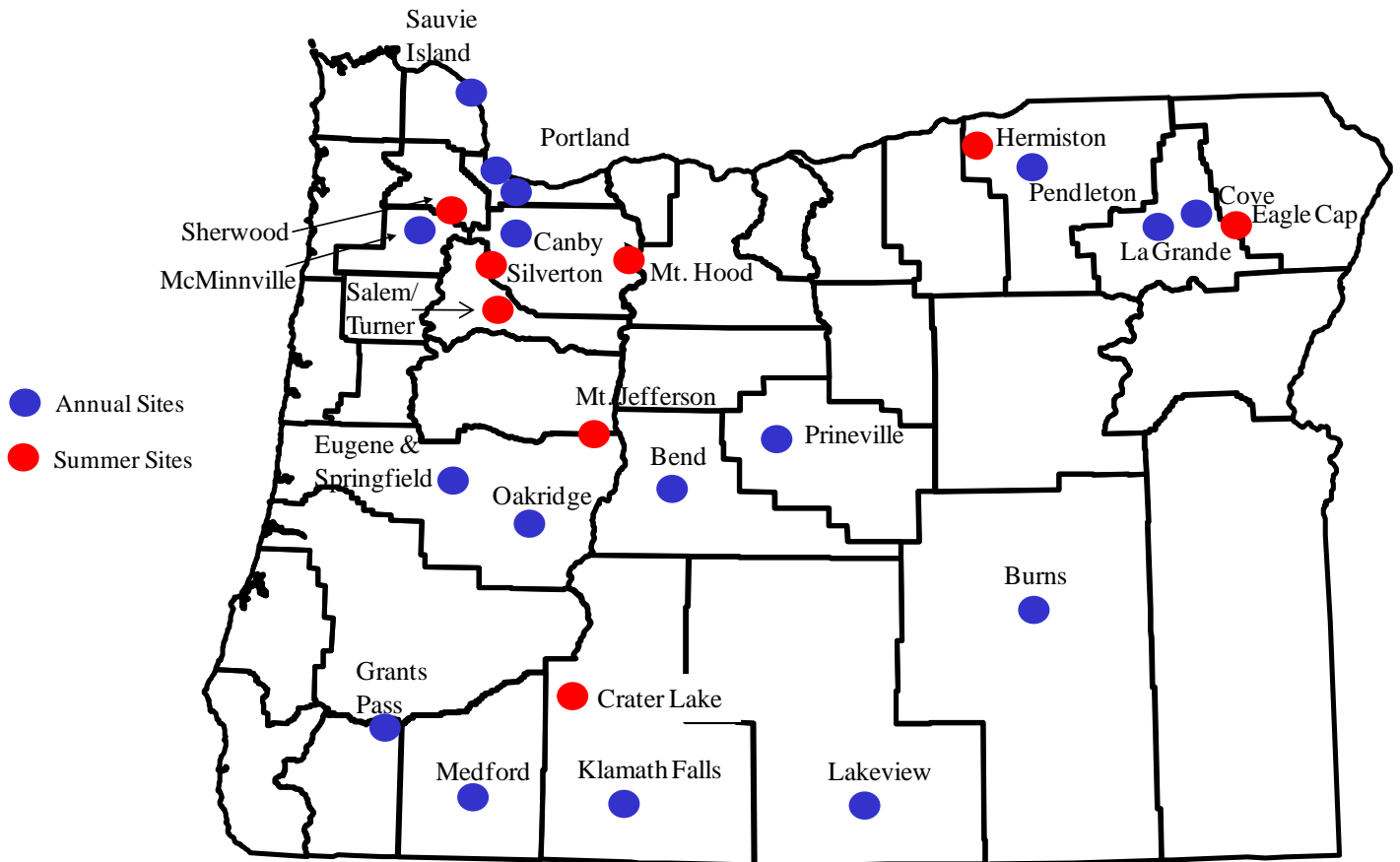


Figure 21. 2011 ODEQ and LRAPA meteorology network.

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4.14 Network Summary

A summary of the July 2010 to June 2011 ambient air monitoring network is shown in Table 17.

Table 17. Oregon ambient monitoring network for 2010 – 2011.

| City | Site | Site Code | EPA# | MSA | Lat | Long | SO ₂ | CO | NO ₂ | O ₃ | VIS/PMest | HAPS | PM ₁₀ | PM _{2.5} | Spec | TSP Pb | WS/WD | Temp | DT | BP | RH | SR |
|------------------------|------------------------------|------------------|-----------|------|--------|----------|-----------------|----|-----------------|----------------|-----------|------|------------------|-------------------|------|--------|-------|------|----|----|----|----|
| Albany | Calapooia School | ACS | 410430009 | 0000 | 44.616 | -123.092 | | | | | X | | | | | | | | | | | |
| Bend | Bend Road Dept.. | BRD | 410170122 | 0000 | 44.022 | -121.260 | | | | X | | | | | | | X | X | | X | X | X |
| | Bend Pump Station | BPS | 410170120 | 0000 | 44.064 | -121.313 | | | | | X | | | D | | | | | | | | |
| Burns | E. Washington St. | BWS | 410250003 | 0000 | 43.589 | -119.048 | | | | | X | | | X | | | X | X | | X | X | X |
| Corvallis | Circle Blvd. Fire Station #3 | CCB | 410030013 | 1890 | 44.588 | -123.274 | | | | | X | | | | | | | | | | | |
| CottageGrove | City Shops | CGH | 410399003 | 0000 | 43.800 | -123.053 | | | | | X | | | X | | | | | | | | |
| Eugene | Lane Community College | LCC | 410390013 | 2400 | 44.048 | -123.092 | | D | | | D | | D | | | | | | | | | |
| | Pacific Hwy99N | EKB | 410390058 | 2400 | 44.066 | -123.140 | | | | | | | X | X | | | | | | | | |
| | E. 29th Amazon Park | EAP | 410390060 | 2400 | 44.026 | -123.084 | | | | X | X | X | X | X | | | | | | | | |
| | Wilkes Dr | WLK | 410390101 | 2400 | 44.116 | -123.121 | | | | | | | | | | | X | X | | | | |
| Saginaw Springfield | Petersen Park | EPB ¹ | 410390062 | 2400 | 44.073 | -123.162 | | | | | | X | | | | | | | | | | |
| | Delight Valley School Rd | SAG | 410391007 | 2400 | 43.834 | -123.035 | | | | X | | | | | | | | | | | | |
| Springfield | City Hall | SSH | 410391009 | 2400 | 44.047 | -123.018 | | | | | X | | | X | | | X | | | | | |
| | Parkside School | GPP | 410330114 | 0000 | 42.432 | -123.346 | | | | | X | | | X | | | X | X | | X | | |
| Hermiston | Municipal Airport | HMA | 410591003 | 0000 | 45.829 | -119.263 | | | | X | | | | | | | X | X | | | | |
| Klamath Falls | Clinton St, Peterson School | KFP | 410350004 | 0000 | 42.189 | -121.723 | | | | | X | N | X | X | X | | X | X | X | X | X | X |
| | Klamath Falls Background | KFB | 410350015 | 0000 | 42.000 | -121.704 | | | | | D | | | | | | D | | | | | |
| La Grande | Ash Street | LAS | 410610119 | 0000 | 45.339 | -117.905 | | | | | X | X | X | D | | | X | X | | X | X | |
| Lakeview | Center & M Streets | LCM | 410370001 | 0000 | 42.189 | -120.352 | | | | | X | | | X | X | | X | X | | X | | |
| Madras | Westside School | MWS | 410310007 | 0000 | 44.631 | -121.132 | | | | | X | | | | | | | | | | | |
| McMinnville | Newby School | MNS | 410711002 | 6440 | 45.209 | -123.212 | | | | | X | | | | | | X | X | | X | X | X |
| | Riverside Road | MPB | 410711702 | 6440 | 45.229 | -123.158 | | | | | | | | | | | X | | | | | |

N = Started up in 2010-2011 D = Shut down in 2010-2011 X = Parameter collected with no change in 2010 - 2011

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(cont.). Oregon ambient monitoring network for 2010 – 2011

| City | Site | Site Code | EPA# | MSA | Lat | Long | SO ₂ | CO | NO ₂ | O ₃ | VIS/PM | HAPS | PM ₁₀ | PM _{2.5} | Spec | PM _{2.5} | TSP Pb | WS/WD | Temp | DT | BP | RH | SR | |
|------------------|---------------------------------|-----------|-----------|------|--------|----------|-----------------|----|-----------------|----------------|--------|------|------------------|-------------------|------|-------------------|--------|-------|------|----|----|----|----|---|
| Medford | Rogue Valley Mall | MRM | 410290018 | 4890 | 42.341 | -122.876 | | D | | | | | | | | | | | | | | | | |
| | Welch & Jackson | MWJ | 410292129 | 4890 | 42.332 | -122.880 | | | | | | | D | | | | | | | | | | | |
| | Grant and Belmont | MGB | 410290133 | 4890 | 42.314 | -122.879 | | | | | X | X | | X | | | | | | | | | | |
| | Talent, Rapp Lane | TAL | 410290201 | 4890 | 42.229 | -122.788 | | | | X | | | | | | | | | | | | | | |
| | Rossanley Drive | MTV | 410291002 | 4890 | 42.368 | -122.910 | | | | | | | | | | | | X | X | X | X | X | X | X |
| | Dodge Road | MDR | 410291001 | 4890 | 42.536 | -122.875 | | | | | | | | D | | | | | | | | | | |
| Oakridge | School Street | OAK | 410392013 | 0000 | 43.744 | -122.481 | | | | | X | | X | X | X | | X | X | | | | | | |
| Pendleton | SW Marshall Pl | PMC | 410590121 | 0000 | 45.652 | -118.819 | | | | | X | | D | X | | | X | X | | | X | | | |
| Portland | SW Miller - KPTV tower | KPTV | 410511080 | 6440 | 45.522 | -122.748 | | | | | | | | | | | | | X | X | | | | |
| | SE Lafayette & SE 58th | SEL | 410510080 | 6440 | 45.497 | -122.602 | X | X | X | X | X | | X | X | X | | X | X | X | X | X | X | X | X |
| | NW 26 th | TTT | 410510009 | 6440 | 45.546 | -122.705 | | | | | | | X | | | | | | | | | | | |
| | SW Third Street | PPB | 410510087 | 6440 | 45.519 | -122.673 | | D | | | | | | | | | | | | | | | | |
| | N Roselawn | PNR | 410510246 | 6440 | 45.561 | -122.679 | | | | | X | X | | D | | | | | | | | | | |
| | N Kirby, Jefferson High | PJH | 410511191 | 6440 | 45.561 | -122.672 | | | | | | | | | | | | X | | | | | | |
| <i>Beaverton</i> | Highland Park School | BHP | 410670111 | 6440 | 45.470 | -122.816 | | | | | X | | | | | | | | | | | | | |
| <i>Carus</i> | Spangler Road | SPR | 410050004 | 6440 | 45.260 | -122.588 | | | | X | X | | | | | | X | X | | | | | | |
| <i>Hillsboro</i> | NE Grant St., Hare Field | HHF | 410671003 | 6440 | 45.518 | -122.967 | | | | | X | | | X | | | | | | | | | | |
| <i>Sauvie Is</i> | Rt 1 Box 442 | SIS | 410090004 | 6440 | 45.768 | -122.772 | | | | X | X | | | | | | X | X | | | | | | |
| <i>Sherwood</i> | SW Lasich Lane | SLR | 410671004 | 6440 | 45.402 | -122.854 | | | | X | | | | | | | X | X | | | X | X | X | |
| Prineville | SE Court St., Davidson Park | PDP | 410130100 | 0000 | 44.300 | -120.845 | | | | | X | | X | | | | X | X | | | X | X | X | |
| Roseburg | NW Garden Valley Blvd | RGV | 410190002 | 0000 | 43.228 | -123.364 | | | | | X | | | | | | | | | | | | | |
| Silverton | James and Western | SJW | 410470007 | 0000 | | | | | | | N | | | | | | | N | N | | | | | |
| Salem | Salem State Hospital | SSH | 410470041 | 7080 | 44.943 | -123.006 | | | | | X | D | | | | | | | | | | | | |
| | <i>Turner</i> Cascade Jr. High, | CJH | 410470004 | 7080 | 44.809 | -122.914 | | | | X | | | | | | | | X | X | | | | | |
| Sweet Home | Fire Department | SFD | 410432002 | 0000 | 44.396 | -122.730 | | | | | X | | | N | | | | | | | | | | |
| The Dalles | Cherry Heights | TDC | 410650007 | 0000 | 45.602 | -121.203 | | | | | X | | | | | | | | | | | | | |
| White City | US PO, Crater Lake Hwy | WPO | 410294001 | 4890 | 42.426 | -122.851 | | | | | | | X | | | | | | | | | | | |

N = Started up in 2010-2011

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5 July 2011 to June 2012 Network Plan

Oregon is facing a state budget crisis and will lose monitoring funding in the 2011-2013 fiscal year. If fully taken, these budget cuts will result in the closure of more sites and the reduction of monitoring staff positions. We have already shut down some PM₁₀ and CO in anticipation for these cuts but this may not be enough. We will likely also have to shut down one air toxic site and a few continuous PM_{2.5} sites. We will preserve our current ozone and FRM PM_{2.5} networks. We will also strive to meet new federal monitor requirements, but without EPA support this will be difficult.

NO₂

EPA revised the NO₂ standard and monitoring rules, requiring a roadside monitor in Portland. ODEQ intends to begin the siting process for that monitor in the summer of 2011 and have it installed by January 2013. A long set up time is required because of possible difficulties with zoning, and permitting with ODOT. We expect this to be an expensive monitor to install because of the unique nature of siting next to a freeway.

Ozone

EPA has proposed revising the Ozone NAAQS and monitoring rule with the possible addition of one or two monitors. ODEQ expects to add a monitoring site south of the Corvallis/Albany area in 2012. The new ozone rules may also required ODEQ to install a monitor in a rural farming or forest (W126) location. There is a substantial cost in installing two monitors. In addition to the setup costs, ODEQ will need to purchase shelters, new ozone monitors, transfer standards, data systems, and fencing.

SO₂

In 2010, EPA revised the SO₂ NAAQS and monitoring rules requiring one monitor in the Portland Metro area. The monitor can be at a maximum site or a population site. ODEQ intends to site the SO₂ at our NCore site, which is a population site. Recent SO₂ monitoring at the maximum sites of (Toledo) and (Hermiston) showed levels which did not approach the revised NAAQS. Using the NCore site will satisfy the community scale information requirements and save resources.

Lead

EPA's revised lead rule does not require airport monitoring in Oregon. The rule still requires community lead monitoring in Portland. ODEQ intends to analyze the low volume PM₁₀ filters already collected at our NCore site. This will satisfy the community assessment requirement at a much lower cost.

PM_{2.5}

EPA will propose a revised PM_{2.5} NAAQS which may require more investment in monitoring. We will wait for the new rule before proposing any network changes.

2011 Oregon Annual Ambient Air Monitoring Network Plan

Specific changes to the network in 2011/12 are:

PM₁₀

ODEQ will discontinue the Klamath Falls PM₁₀ FRM (41-035-0004) because this site has lost its funding and has not had a second high value above 62% of the NAAQS in the last 11 years.

PM_{2.5}

ODEQ intends to move our Madras, Westside School (41-031-0007) nephelometer to Redmond. Madras has low PM_{2.5} estimated values and has enough data. Redmond had one of the highest population growth rates in the past ten years. This site is state funded. This move is contingent on continued state funding, which is unlikely.

Lead

ODEQ will start lead analysis on the PM₁₀ filters at Portland SE Lafayette (41-051-0080) in Jan. 2012. The funding source is expected to be EPA, as they have done with the TSP lead in McMinnville. Without the EPA funding this analysis will not be done.

Air Toxics

- 1) The state funding for Klamath Falls air toxics may be cut on June 30th, 2011 at which time the site may be discontinued. If it is not cut, the site may run until the end of 2011, then move to a location using the decision matrix in the ODEQ, 2010 five year network plan. This is state funded.
- 2) ODEQ will move the Medford air toxic site from Grant and Belmont (41-029-0133) to a new site in the industrial area in north Medford. This site will run for one year then may move to the next location in the decision matrix in the ODEQ, 2010 five year network plan. This is state funded.
- 3) LRAPA's two site Eugene survey will end and Petersen Park will be discontinued. The Amazon Park samplers will shut down indefinitely until funding is available.
- 4) ODEQ is applying for a community assessment air toxics grant in support of our Portland Air Toxics Solutions program. We have already created an air toxic model of the Portland Metro area and are working on putting rules in place to lower air toxic emissions. We would like to monitor in areas the model shows to have high air toxic levels before these rules go into place to validate the modeling. We also need to have a baseline so we know if our new programs are effective in reducing pollution levels.

Oregon DEQ and LRAPA's goal remains to provide useful high quality monitoring information to Oregonians and to EPA. Expected budget cuts to the agency will make this a challenge, but we hope to be successful by prioritizing our resources to pollutants of most concern.

6 Conclusion

ODEQ and LRAPA continuing to follow the EPA monitoring strategic plan and focus our networks on PM_{2.5} and ozone (because these pollutants are near or above the NAAQS), air toxics, and real time reporting. We also have Oregon's National CORE site at Portland, SE Lafayette fully operational except for lead which we will do before January 2012 (pending EPA funding).

Recent (and proposed) changes in the NAAQS and monitoring rules will require ODEQ to focus more resources on ozone, NO₂, SO₂, and lead. Depending on the new PM_{2.5} rule, we may also have to expend more resources in this area. All these new requirements are occurring while Oregon state funding is being reduced. To finance this new monitoring, some lower priority monitoring was discontinued; specifically, CO, PM₁₀, and low or redundant PM_{2.5} sites. Any additional cuts will impact the EPA monitoring strategic plan by reducing air toxics and continuous monitoring. The new NO₂ roadway site, ozone sites, and lead analysis, will add costs and will require EPA funding.

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APPENDIX A. TOTAL LIST OF COMPOUNDS ANALYZED IN ODEQ AND LRAPA HAZARDOUS AIR POLLUTANTS (HAPS) PROGRAMS.

HV Mass PM₁₀ Quartz

| | | |
|-----------|----------|-----------|
| Arsenic | Chromium | Manganese |
| Beryllium | Cobalt | Nickel |
| Cadmium | Lead | Selenium |

Air Quality HAPs - Ketones/aldehydes by TO-11

| | | |
|---------------------------------|------------------|--------------------------|
| Formaldehyde | 2-Butanone (MEK) | o-Tolualdehyde |
| Acetaldehyde | Butyraldehyde | m-Tolualdehyde |
| Acetone | Benzaldehyde | p-Tolualdehyde |
| Propionaldehyde | Isovaleraldehyde | Hexaldehyde |
| Crotonaldehyde (2-Butenal, (E)) | Valeraldehyde | 2,5-Dimethylbenzaldehyde |

Air Quality HAPs - Semi-volatile Organic Compounds by TO-13

| | | |
|------------------|----------------------|------------------------|
| Naphthalene | Anthracene | Benzo[e]pyrene |
| Acenaphthylene | Fluoranthene | Benzo[a]pyrene |
| Acenaphthene | Pyrene | Perylene |
| Dibenzofuran | Benzo[a]anthracene | Indeno[1,2,3-cd]pyrene |
| Fluorene | Chrysene | Dibenz[a,h]anthracene |
| Dibenzothiophene | Benzo[b]fluoranthene | Benzo[g,h,i]perylene |
| Phenanthrene | Benzo[k]fluoranthene | Coronene |

Air Quality HAPs - VOCs by Method TO-15

| | | |
|-----------------------------|--------------------------|--------------------------------|
| 1,1,1-Trichloroethane | 2-Hexanone | Dichlorotetrafluoroethane |
| 1,1,2,2-Tetrachloroethane | 3-Chloropropene | Ethyl Benzene |
| 1,1,2,2-Tetrachloroethylene | 4-Ethyltoluene | Hexachloro-1,3-Butadiene |
| 1,1,2-Trichloroethane | Acetone | Isopropanol |
| 1,1-Dichloroethane | Acrylonitrile | Methylene Chloride |
| 1,1-Dichloroethylene | Benzene | 4-Methyl-2-Pentanone (MIBK) |
| 1,2,4-Trichlorobenzene | Bromodichloromethane | Methyl-tert-Butyl Ether (MTBE) |
| 1,2,4-Trimethylbenzene | Bromoform | n-Heptane |
| 1,2-Dibromoethane (EDB) | Bromomethane | n-Hexane |
| 1,2-Dichlorobenzene | Carbon Disulfide | Styrene |
| 1,2-Dichloroethane | Carbon Tetrachloride | Tetrahydrofuran |
| 1,2-Dichloropropane | Chlorobenzene | Toluene |
| 1,2-Dimethylbenzene | Chloroethane | trans-1,2-Dichloroethene |
| 1,3,5-Trimethylbenzene | Chloroform | trans-1,3-Dichloropropene |
| 1,3-Butadiene | Chloromethane | Trichloroethylene |
| 1,3-Dichlorobenzene | cis-1,2-Dichloroethylene | Trichlorofluoromethane |
| 1,4/1,3-Dimethylbenzene | cis-1,3-Dichloropropene | Trichlorotrifluoroethane |
| 1,4-Dichlorobenzene | Cyclohexane | Vinyl bromide |
| 2,2,4-Trimethylpentane | Dibromochloromethane | Vinyl Chloride |
| 2-Butanone (MEK) | Dichlorodifluoromethane | |

Not all compounds in this list are Hazardous Air Pollutants.