

## Appendix B

### Transport Assessment for the 12.0 $\mu\text{g}/\text{m}^3$ PM<sub>2.5</sub> NAAQS

This section employs a weight of evidence approach which demonstrates that California does not contribute significantly to nonattainment or interfere with maintenance of the 12.0  $\mu\text{g}/\text{m}^3$  annual PM<sub>2.5</sub> NAAQS in any state.

The potential receptors included in this assessment are shown in Figure B.1 and are limited to two receptors in Idaho. All PM<sub>2.5</sub> monitors in the western states with design values that exceed the 12.0  $\mu\text{g}/\text{m}^3$  PM<sub>2.5</sub> NAAQS in the most recent three design value years are listed in Table B.1. Those receptors without valid design values are not included in any further assessment as potential receptors.

Figure B.1: State of California and Location of Potential Nonattainment and Maintenance Receptors for 12.0  $\mu\text{g}/\text{m}^3$  PM<sub>2.5</sub> NAAQS



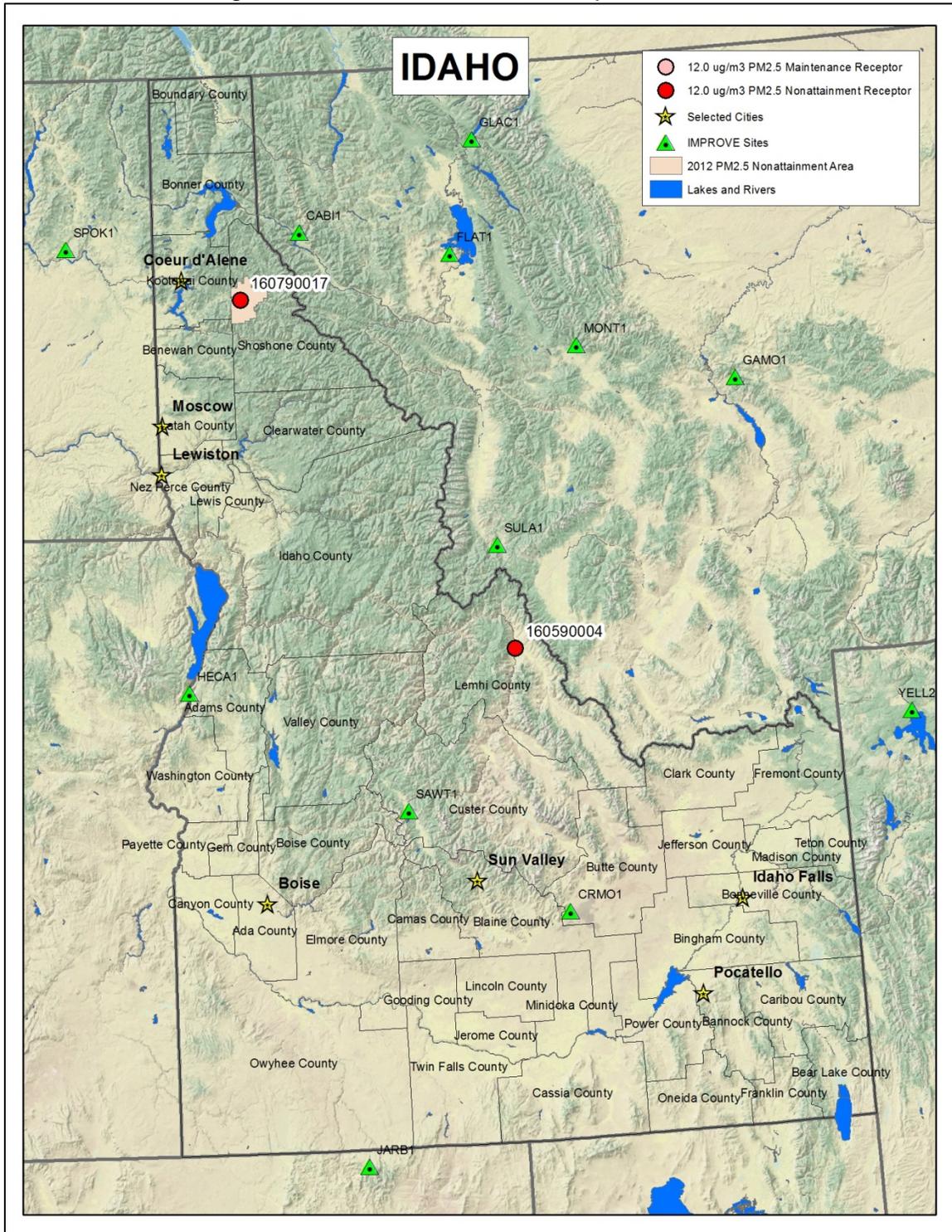
Table B.1: List of Western Counties with Annual PM<sub>2.5</sub> Design Values above the Standard (NAAQS exceedances are shown in red)

EPA Reg.	State	County	Non-attainment Area: 12.0 µg/m <sup>3</sup> Standard	Site ID	Annual Standard Design Values (µg/m <sup>3</sup> )						Potential Receptor Type
					2010-2012		2011-2013		2012-2014		
10	Idaho	Franklin		16-041-0001	16.8	NV					
10	Idaho	Lemhi		16-059-0004	11.2		12		12.1		Non-attainment
10	Idaho	Shoshone	West Silver Valley	16-079-0017	12.1		12.8		13.1		Non-attainment
09	Nevada	Douglas		32-005-0007			16.5	NV	12.3	NV	
09	Nevada	Carson City		32-510-0020			12.1	NV	8.8	NV	
10	Oregon	Harney		41-025-0002	14	NV					
08	Utah	Utah		49-049-5008	14.8	NV	21.6	NV			
10	Washington	Clark		53-011-0023			12.3	NV	10.1	NV	
10	Washington	Thurston		53-067-0013			12.6	NV	10	NV	

NV = non valid design value

# Idaho

Figure B.2: Potential PM<sub>2.5</sub> Receptors in Idaho



There are two potential nonattainment receptors in Idaho, separated by approximately 200 miles (Figure B.2 and Table B.2). Each of these receptors is evaluated separately. Only one portion of Idaho, the West Silver Valley in Shoshone County, is designated as a nonattainment area for the 12.0  $\mu\text{g}/\text{m}^3$   $\text{PM}_{2.5}$  NAAQS.

Table B.2: Potential  $\text{PM}_{2.5}$  Receptors in Idaho (NAAQS exceedances in red)

County	$\text{PM}_{2.5}$ NAAQS Nonattainment Area	AQS ID	Annual Design Value ( $\mu\text{g}/\text{m}^3$ )			Receptor Type	Approximate Distance to California Border (miles)
			2012	2013	2014		
Lemhi		16-059-0004	11.2	12.0	12.1	Nonattainment	380
Shoshone	West Silver Valley	16-079-0017	12.1	12.8	13.1	Nonattainment	430

There are very few  $\text{PM}_{2.5}$  monitors in Idaho with complete data (Table B.3). The monitors closer to California, in Canyon County near Boise on the western border with Oregon and Bannock County near Pocatello, near the southern border with Utah, are both well below the standard, although data at the Canyon site is incomplete.

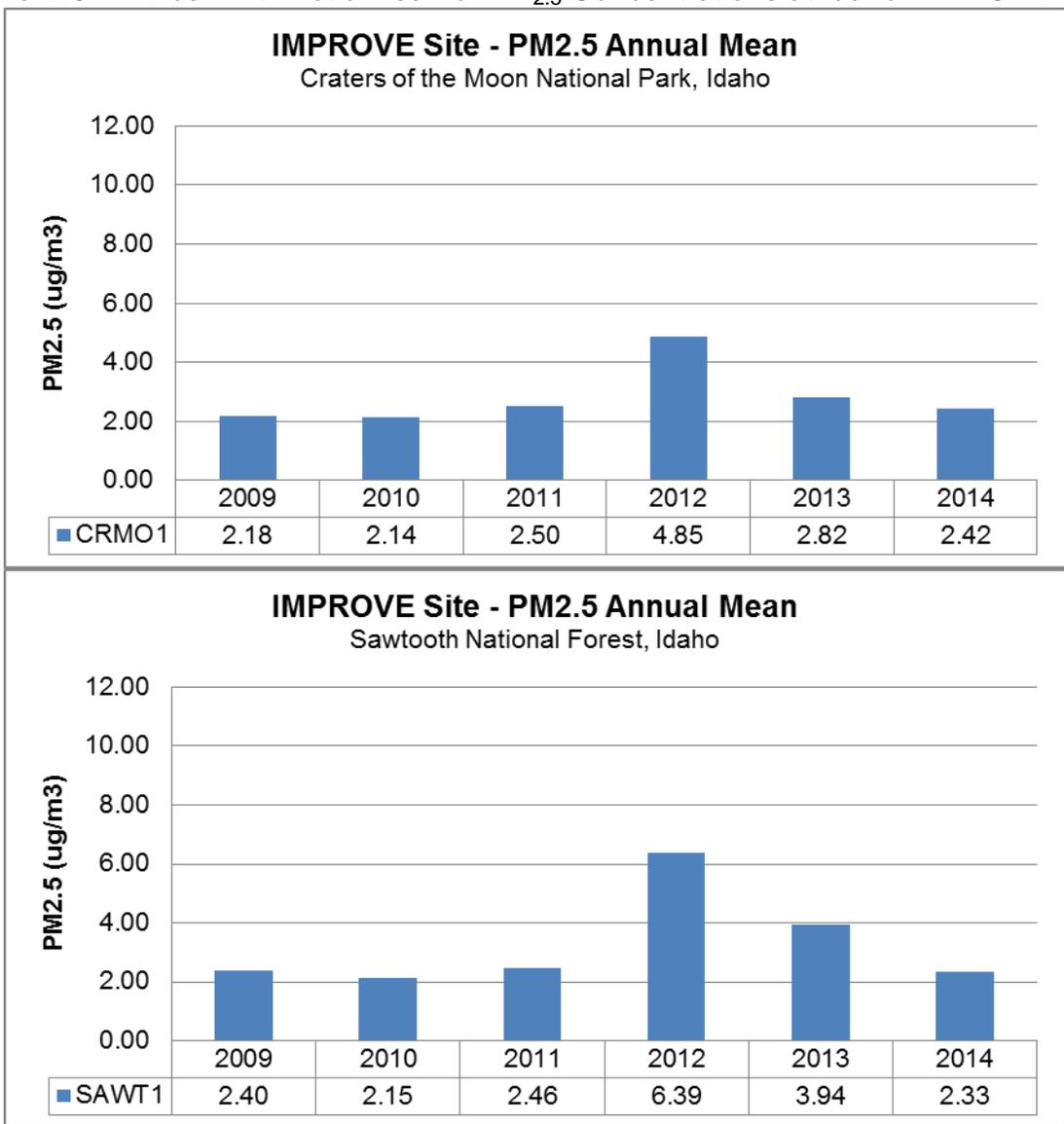
Table B.3:  $\text{PM}_{2.5}$  Annual Design Values in Idaho (NAAQS exceedances in red)

County	AQS ID	Annual Design Value ( $\mu\text{g}/\text{m}^3$ )					
		2010-2012		2011-2013		2012-2014	
Ada	16-001-0010	5	NV				
Bannock	16-005-0020	6.5		7.7		7.9	
Benewah	16-009-0010	9.2	NV				
Canyon	16-027-0002	5.9	NV				
Franklin	16-041-0001	16.8	NV				
Lemhi	16-059-0004	11.2		12		12.1	
Shoshone	16-079-0017	12.1		12.8		13.1	

NV = non valid design value

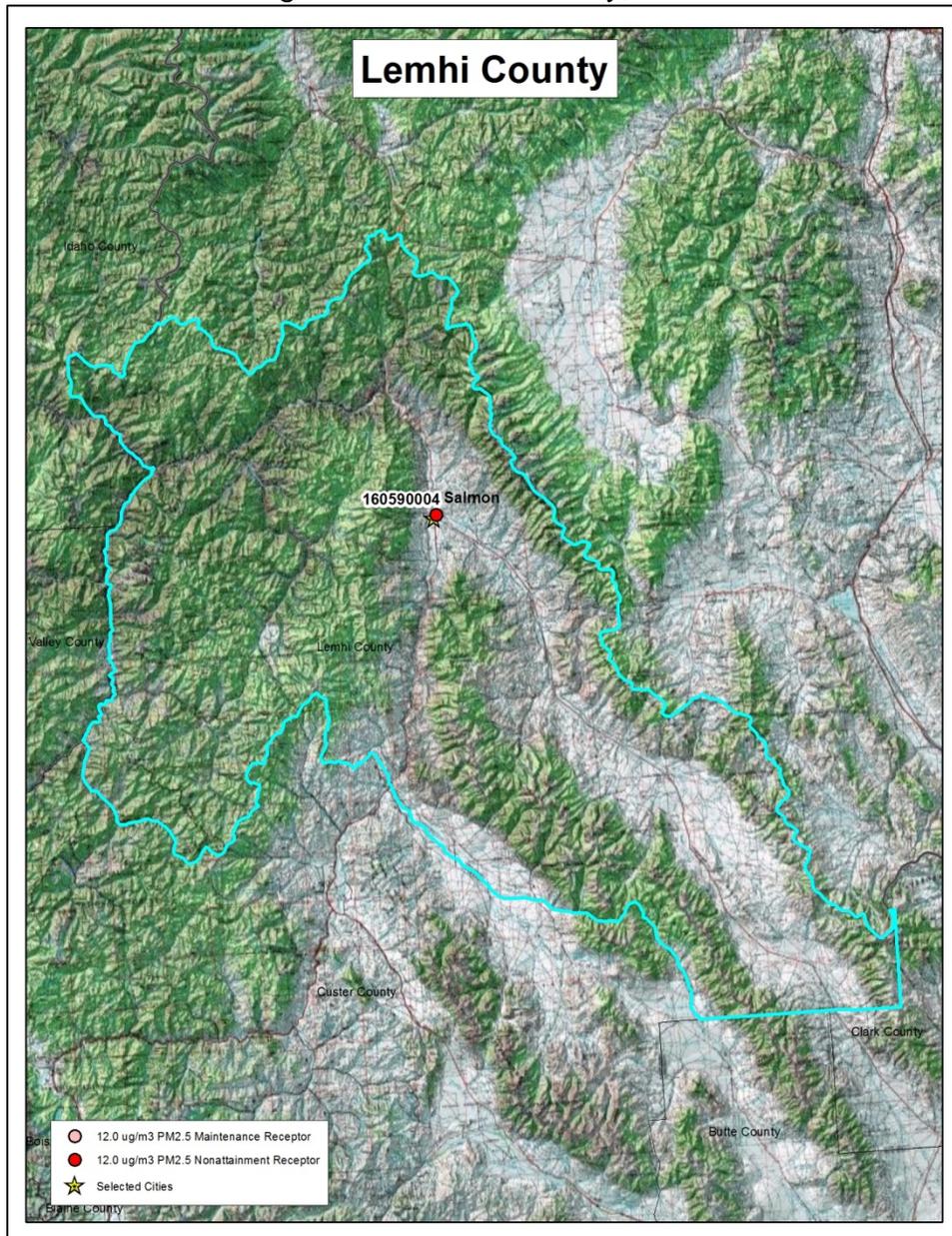
IMPROVE monitors in Idaho show only minor impacts from California on even the worst days (Appendix E.1). Trends show higher concentrations in the summer months, in contrast to the high wintertime concentrations seen at the Lemhi monitor (previous Figure A.13). Weighted Emission Potential analysis indicates that the worst visibility days at the IMPROVE sites in Idaho are the result of more localized regional influences, with California's contributions occurring most often during those days with the best visibility (Appendix E.1). The highest daily concentrations at IMPROVE sites in Idaho are directly linked to large wildfires in the western states (Appendix E.1). Annual arithmetic means at the IMPROVE sites in Idaho show annual concentrations well below the 2012 NAAQS (Figure B.3)

Figure B.3: Annual Arithmetic Mean of PM<sub>2.5</sub> Concentrations at Idaho IMPROVE sites



## Lemhi County Nonattainment Receptor, AQS ID 16-059-0004

Figure B.4: Lemhi County, Idaho



Lemhi County is a largely mountainous region, located in the eastern portion of Idaho and sharing a border, and a position along the continental divide, with Montana (Figure B.4). This is the fourth largest county in Idaho by area, encompassing approximately 4,600 square miles. The Salmon River cuts through the center of the county, running northwest to south, creating a large valley that lies approximately 3,000 feet below the surrounding mountain peaks. These peaks rise to over 8,000 feet and

act to limit emission transport to the valley, particularly from the east and west.<sup>1</sup> The receptor is approximately 380 miles from the northeast corner of California, separated by the Sierra Nevada, Cascade, and Bitterroot Ranges. It is almost 600 miles to the closest California emission source (Appendix F.1), with the nearest large local emission source found almost 140 miles away in Montana.

The county is considered fairly rural, with an estimated population of less than 8,000 in 2014, with a 2.3 percent decrease in the last decade (Table B.4). The largest populated area in the county is the City of Salmon, home to approximately 3,000 people. The number of vehicle miles traveled has declined along with the declining population, but by a much higher percentage, down 35 percent since 2005.

Table B.4: Population and VMT in Lemhi County, Idaho<sup>2</sup>

County	Population (2014)	Population Growth (2005 to 2014)	Population change (2005 to 2014)	2011 VMT (millions mi)	VMT Growth (millions mi from 2005 to 2011)	VMT change (2005 to 2014)
Lemhi	7,725	-184	-2.3%	85	-46	-35.1%

The site's PM<sub>2.5</sub> annual design values show that the area has been below the standard since 2007 and barely exceeding in 2014 (Figure B.5). Wildfire impacts were noted in August and September of 2012 when daily average concentrations exceeded 200 µg/m<sup>3</sup>. In total, over 100 days were flagged as being impacted by wildfires; 45 of these days were removed by U.S. EPA from design value calculations. As previously discussed in the Idaho section of Appendix A, although removing all 100 flagged days from consideration would lower the 24-hour design value at the Lemhi monitor, the area would still violate the 35 µg/m<sup>3</sup> PM<sub>2.5</sub> NAAQS. The area would not, however, violate the 12.0 µg/m<sup>3</sup> PM<sub>2.5</sub> annual standard if these flagged days were removed from consideration as requested by Idaho (Table B.5).

During determinations of attainment status for the 35 µg/m<sup>3</sup> PM<sub>2.5</sub> NAAQS, U.S. EPA concluded that Lemhi County was not be a candidate for nonattainment due, in part, to relatively low emission levels, a small population, minimal commuter activity and a lack of large emission sources.<sup>3</sup> These elements would still be factored into attainment status considerations under the 12.0 µg/m<sup>3</sup> PM<sub>2.5</sub> NAAQS, but based on 2010 to 2012 design value data, the area was not a candidate for nonattainment.<sup>4</sup> The Idaho Department of Environmental Quality still considers the Salmon receptor area to be an area of concern for PM<sub>2.5</sub>.<sup>5</sup> Residential wood burning, particularly during periods of

<sup>1</sup> U.S. EPA Technical Support Document , Idaho Area Designation for the 2006 24-hour Fine Particle National Ambient Air Quality Standard, August 18, 2008

<sup>2</sup> U.S. EPA, Population and Vehicle Miles Traveled, Emission and Emission-Related Data, <http://www3.epa.gov/pmdesignations/2012standards/techinfo.htm>

<sup>3</sup> U.S. EPA Technical Support Document , Idaho Area Designation for the 2006 24-hour Fine Particle National Ambient Air Quality Standard, August 18, 2008

<sup>4</sup> State of Idaho, 2012 PM<sub>2.5</sub> NAAQS Recommendation Letter to U.S. U.S. EPA, December 6, 2013. <http://www3.epa.gov/pmdesignations/2012standards/rec/r10idrec1.pdf>

<sup>5</sup> [http://www.deq.idaho.gov/media/662796-nonattainment\\_map.pdf](http://www.deq.idaho.gov/media/662796-nonattainment_map.pdf)

wintertime inversions, is considered a primary contributor to PM<sub>2.5</sub> exceedances<sup>6</sup> and would be considered a primary factor in any exceedances of the annual standard as well.

Figure B.5: PM<sub>2.5</sub> Annual Design Values, Lemhi County, Idaho

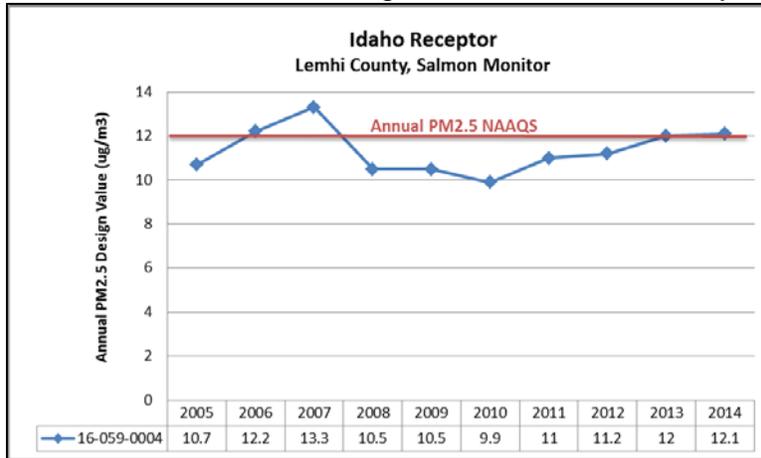


Table B.5: Impact of Exceptional Events on Potential PM<sub>2.5</sub> Receptor in Lemhi County, Idaho (NAAQS exceedances in red)

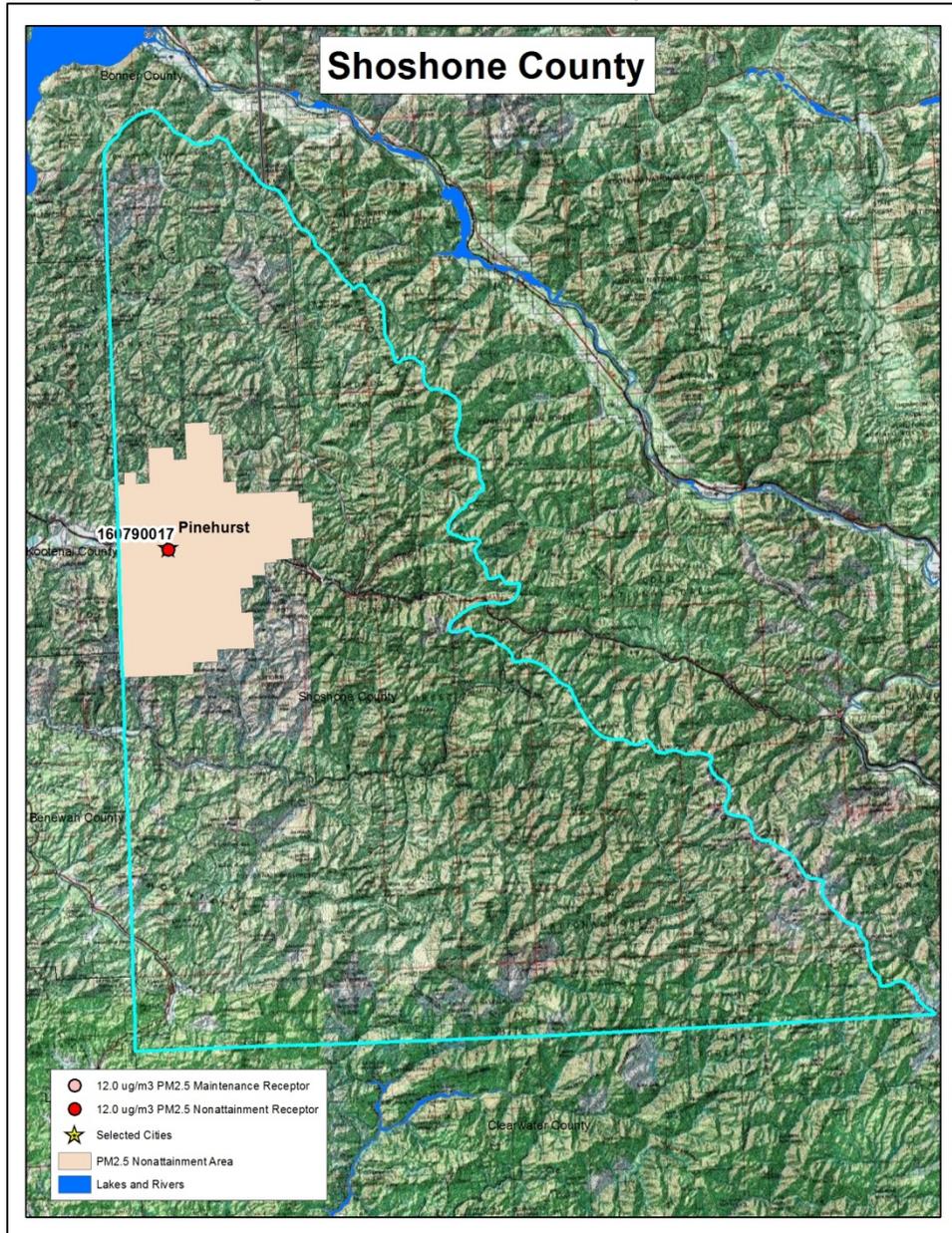
County	Site	Annual Average			Annual Design Value		
		2012	2013	2014	2010-2012	2011-2013	2012-2014
Lemhi	<b>16-059-0004</b>						
	EPA AMP480	11.1	12.6	12.7	11.2	12.0	12.1
	minus all flagged days	10.4	11.4	12.1	11.0	11.3	11.3
	minus flagged days =>35.4	11.6	12.0	12.7	11.4	11.9	12.1

Based on the above-described information, the distance from California and the intervening terrain, the high level of wildfire emissions during the otherwise low concentration summer season as noted in Section IV, as well as the effect of local topography and emission sources, particularly residential wood burning, on wintertime 24-hour exceedances, we believe it is reasonable to assume that emissions from California do not significantly contribute to nonattainment of the 12.0 µg/m<sup>3</sup> PM<sub>2.5</sub> NAAQS at this receptor.

<sup>6</sup> U.S. EPA Technical Support Document, Washington State Implementation Plan and Interstate Transport Requirements for the 2006 24-hour Fine Particulate Matter National Ambient Air Quality Standards, May 13, 2015.

**Shoshone County Nonattainment Receptor, AQS Site ID 16-079-0017**

Figure B.6: Shoshone County, Idaho



Shoshone County is a rural county in the panhandle region of Idaho in the far north of the state (Figure B.6). The potential nonattainment receptor is located in the town of Pinehurst in a small, enclosed, bowl-shaped valley at the western end of the Silver Valley. The Silver Valley is a long narrow valley, formed by the Coeur d'Alene River. Elevation in the Silver Valley ranges from 2,200 feet where Pinehurst is located to 3,300 feet at the eastern end.<sup>7</sup> The area is in nonattainment for the 12.0 µg/m<sup>3</sup> PM<sub>2.5</sub> NAAQS. The receptor is approximately 430 miles from California, separated by the Sierra Nevada, Cascade, and Bitterroot Ranges. It is almost 700 miles from the nearest California emission source (Appendix F.1), with the closest local large emission source found over 80 miles away in Idaho's Nez Perce County to the southwest.

The population of Shoshone County is currently just above 12,000 (Table B.6), with the population at Pinehurst, the location of the violating monitor, considerably less at approximately 1,600. The populations of both Pinehurst and Shoshone County have declined in recent years with a corresponding decrease in the number of vehicle miles traveled.

Table B.6: Population and VMT in Shoshone County, Idaho<sup>8</sup>

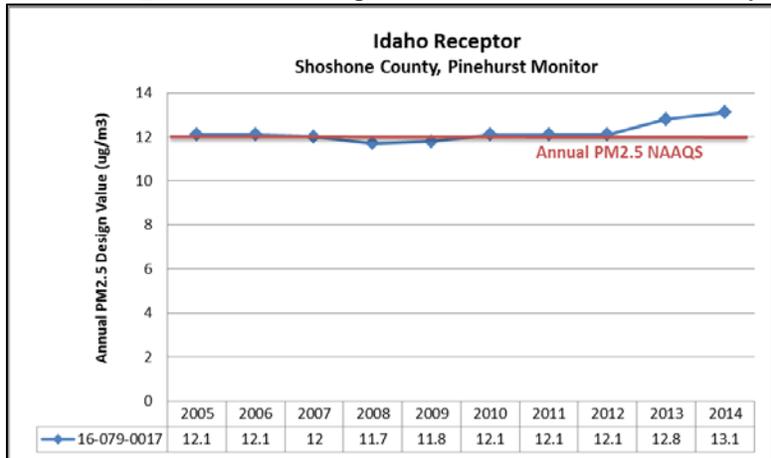
County	Population (2014)	Population Growth (2005 to 2014)	Population change (2005 to 2014)	2011 VMT (millions mi)	VMT Growth (millions mi from 2005 to 2011)	VMT change (2005 to 2014)
Shoshone	12,390	767	-5.8%	216	-11	-4.9%

The Pinehurst monitoring site's annual design values show that the area has been hovering around the standard since 2005, barely dipping below in 2008 and 2009 (Figure B.7). As noted in Section IV, daily data for 2011 to 2014 shows that winter is the high season with the lowest concentrations in the summer (previous Figure A.15). Wildfire impacts were noted in August and September of 2012, although most concentrations did not exceed the 24-hour standard. Idaho flagged 74 days as potential exceptional events at the Shoshone Pinehurst monitor, but only three have been concurred on by U.S. EPA and only one was above the 24-hour standard. Additional concurrence by U.S. EPA on flagged data would lower the area's design values, but would have no effect on the attainment status for either of the PM<sub>2.5</sub> standards.

<sup>7</sup> State of Idaho Department of Environmental Quality, Idaho Area Designation Recommendations for the 2006 PM<sub>2.5</sub> NAAQS, December 14, 2007.

<sup>8</sup> U.S. EPA, Population and Vehicle Miles Traveled, Emission and Emission-Related Data, <http://www3.epa.gov/pmdesignations/2012standards/techinfo.htm>

Figure B.7: PM<sub>2.5</sub> Annual Design Values, Shoshone County, Idaho



U.S. EPA determined that the main emissions sources affecting the Shoshone Pinehurst monitor were residential wood heating and motor vehicles<sup>9</sup> However, open burning and slash burning were also identified as large emissions sources that could contribute to violations of the 24-hour PM<sub>2.5</sub> standard. Idaho’s analysis of the Pinehurst area showed that topographical features and wintertime meteorology limit transport of pollutants between other air sheds within Shoshone County and Pinehurst, with even the air from the valley just east of Pinehurst not mixing with air from Pinehurst during exceedances. Idaho asserted that pollutants emitted within Pinehurst remain trapped, and emissions from outside the Silver Valley do not contribute to PM<sub>2.5</sub> pollutant concentrations.<sup>10</sup>

Based on the above-described information, the distance from California and the intervening terrain, and the effect of local topography and emission sources, particularly residential wood burning, on wintertime exceedances, we believe it is reasonable to assume that emissions from California do not significantly contribute to nonattainment of the 12.0 µg/m<sup>3</sup> PM<sub>2.5</sub> NAAQS at this receptor.

<sup>9</sup> U.S. EPA Technical Support Document, Idaho Area Designation for the 2006 24-hour Fine Particle National Ambient Air Quality Standard, August 18, 2008.

<sup>10</sup> Ibid.