A Plan for Maintaining Particulate Matter (PM_{10}) Ambient Air Quality Standards in the Wallula PM_{10} Maintenance Area

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A Washington State Implementation Plan Revision

March 2005
Publication No. 05-02-008

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Washington State Department of Ecology

Air Quality Program

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[1] The Plan Appendices are found in a separate volume that accompanies the Wallula maintenance plan.

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Executive Summary

The Wallula PM_{10} Maintenance Plan serves as a request to the U. S. Environmental Protection Agency (EPA) to redesignate the Wallula PM_{10} nonattainment area to attainment and as a plan to maintain the federal health standard for PM_{10} in the area for 10 years after redesignation. PM_{10} is particulate matter with an aerodynamic diameter of 10 micrometers or less.

The first requirement for redesignation is monitored attainment of the PM_{10} standard. Review of monitoring data shows the Wallula PM_{10} nonattainment area attained the PM_{10} standard by the December 31, 2001 attainment date established by the Clean Air Act. The area continued to maintain the PM_{10} standard in 2002 and 2003.

Additional redesignation requirements are a fully approved attainment plan, fulfillment of other state implementation plan requirements, and improvement in air quality resulting from permanent and enforceable emission reductions. The plan reviews how these requirements are being satisfied. Full EPA approval of the serious attainment plan for Wallula will complete the requirements. The plan was submitted to EPA in November 2004.

The final requirement is full approval of the maintenance plan for Wallula. The maintenance plan addresses the elements defined by EPA for a maintenance plan. Major elements include the attainment emission inventory, demonstration of maintenance, a contingency plan, and transportation conformity.

The 2002 attainment emissions inventory for a typical PM_{10} season day, which occurs from June through September, indicates that most of the emissions come from agricultural tilling (51.2%), the pulp and paper mill (20.1%), small industrial sources (19.0%) and mobile sources (9.4%).

A receptor modeling approach is used to project that 2015 PM_{10} concentrations will be below the150 $\mu g/m^3$ level of the 24-hour PM_{10} standard. This demonstration is supplemented by showings that emissions from both the permitted but not yet constructed Wallula Power Project and the existing Boise Cascade pulp and paper mill are consistent with maintenance of the standard.

The contingency measures, which are carried over from the attainment plan, are focused on windblown dust, the major air quality issue in the Wallula area. These measures include (1) enhancements to PM_{10} monitoring that provide improved identification of sources during an exceedance, (2) improved tracking of attainment through quality-assured continuous monitoring and (3) continuing implementation of BACM for wind-blown dust as described in the Natural Events Action Plan for eastern Washington.

The maintenance plan determines that motor vehicles are an insignificant source of PM_{10} emissions and justifies exclusion from regional analysis for transportation conformity.

Preface

This document is both a request to redesignate the Wallula Nonattainment Area, Washington to attainment for particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}) and a plan to maintain the federal health standard for PM_{10} in the Wallula Maintenance Area for 10 years following redesignation. The document is generally referred to as the Wallula PM_{10} Maintenance Plan or the Wallula Maintenance Plan, for short. The United States Environmental Protection Agency (EPA) has established the ambient air quality standard for PM_{10} to protect public health.

The Wallula Maintenance Plan represents the collective effort of many individuals. I would like to express appreciation to the following individuals for their assistance in bringing this planning effort to a successful conclusion:

- Bob Saunders, Brett Rude, Mike Boyer, Clint Bowman, Sally Otterson, Stan Rauh, Mike Ragan, Ken Gamble, Neil Hodgson, Greg Hannahs and Melissa McEachron of Ecology
- Donna Deneen, Rob Wilson, and Keith Rose of EPA

I would also like to express my appreciation to Brian Worden of Worden Farms and Jim Kuntz, Executive Director of the Port of Walla Walla, for permission to use their property for monitoring. Thanks also go out to Boise Cascade Corporation, Christian Mann and John St. Clair for their assistance with monitoring in this rural nonattainment area.

I have not intended to overlook anyone who contributed significantly to the planning effort. I extend my apologies to anyone I may have overlooked and trust that they will recognize that failure on my part to credit the efforts of any individual does not diminish the value of the efforts.

Douglas L. Schneider
Air Quality Program
Washington State Department of Ecology

Abbreviations and Acronyms

AQS	Air Quality System
ARS	Agricultural Research Service
BACM	Best Available Control Measures
BACT	Best Available Control Technology
BCAA	Benton Clean Air Authority
BCD	Benton Conservation District
BMPs	Best Management Practices
CRP	Conservation Reserve Program
FRM	Federal Reference Method
FSA	Farm Service Agency
LAER	Lowest Available Emission Rate
NAA	nonattainment area
NAAQS	National Ambient Air Quality Standard
NEAP	Natural Events Action Plan
NEP	Natural Events Policy
PM_{10}	Particulate Matter with an aerodynamic diameter equal to or less than 10 microns
RACM	Reasonably Available Control Measures
RACT	Reasonably Available Control Technology
RFP	Reasonable Further Progress
SIP	State Implementation Plan

SLAMS	State and Local Monitoring System
TEOM	Tapered Element Oscillating Microbalance
TSP	Total Suspended Particulate
UTM	Universal Transverse Mercator

Chapter 1. Introduction

This introductory chapter provides information on the purpose of this document, the requirements for redesignation, summarizes the PM_{10} standards, describes the Wallula Nonattainment Area (NAA), and reviews its legal status under the Clean Air Act.

1.1 Purpose of the Maintenance Plan

This document serves two purposes: first, it is a request for EPA to redesignate the Wallula PM_{10} NAA to attainment and second, it is a plan to maintain the PM_{10} standard for ten years following redesignation to attainment. The document is generally referred to as the maintenance plan for Wallula, WA. After redesignation to attainment, the Wallula NAA will become the Wallula PM_{10} Maintenance Area.

1.2 Requirements for Redesignation

The five basic requirements for redesignation of a nonattainment area to attainment are set forth in Section 107(d) of the Clean Air Act. The Act requires the following:

(1) Monitored attainment of the National Ambient Air Quality Standard (NAAQS) for PM_{10}

(2) Full U. S. Environmental Protection Agency (EPA) approval of the attainment plan

(3) Fulfillment of other Section 110 State Implementation Plan and Nonattainment Area Part D requirements applicable to the area

(4) Improvement in air quality resulting from permanent and enforceable emission reductions

(5) Full EPA approval of a maintenance plan that meets the requirements of Section 175A of the Clean Air Act

Chapter 2 deals with the first requirement, attainment of the PM_{10} standard. Chapter 3 addresses the next three requirements: attainment plan approvals, additional Clean Air Act requirements and improvement in air quality due to permanent and enforceable emission reductions. Chapter 4 is the plan to maintain the standard for 10 years following redesignation.

1.3 PM_{10} Standards

In 1987, EPA revised the NAAQS for particulate matter by replacing the NAAQS for total suspended particulate (TSP) with a new NAAQS for PM_{10}. In contrast with TSP, which is composed of tiny airborne particles or aerosols with an aerometric diameter of 100 microns or less, PM_{10} refers to particulate matter less than or equal to 10 microns in aerometric diameter. Ten microns is 0.0004 inch or one-seventh the width of a human hair. The PM_{10} standard focuses on smaller particles since these are likely to be responsible for adverse health effects because of their ability to reach the lower regions of the respiratory tract.

The primary and secondary NAAQS for PM_{10} are the same for both 24-hour and annual concentrations. The primary standard is established to protect public health; the secondary standard is for welfare effects. The standards are defined as follows:

24-Hour Standard
The ambient air quality standard for particulate matter with an aerodynamic diameter equal to or less than 10 micrometers (PM_{10}) is 150 $\mu g/m^3$ for a 24-hour average concentration. The standard is attained when the expected number of days per calendar year with a 24-hour concentration above 150 $\mu g/m^3$, as determined in accord with 40 CFR 50 Appendix K, is equal to or less than one—that is, when there is no more than one exceedance per year.

Annual Standard
The ambient air quality standard for particulate matter with an aerodynamic diameter equal to or less than 10 micrometers (PM_{10}) is 50 $\mu g/m^3$ for an annual arithmetic mean. The standards are attained when the expected annual arithmetic mean concentration, as determined in accord with 40 CFR 50 Appendix K, is equal to or less than 50 $\mu g/m^3$.

1.4 Health Effects

PM_{10} can accumulate in the respiratory system and is associated with numerous health effects. Short-term exposure to PM_{10} can irritate the lungs and may cause immune responses. Lung constriction that produces shortness of breath and coughing may result. The materials dissolving from the particles can also damage cells. The larger particles deposit in the upper respiratory tract, while smaller particles travel deeper into the lungs and are retained for longer periods of time.

Long-term, low-level PM_{10} exposure may cause cancer and premature deaths. Those with a known history of asthma or chronic lung disease are especially sensitive to these effects. The elderly or those with pre-existing heart conditions may also have severe reactions since the resulting lack of oxygen may strain the heart.

1.5 Description of the Wallula Nonattainment Area

The Wallula NAA lies in eastern Washington just north of the Oregon border in the geographic area known as the Columbia Plateau. The NAA includes parts of Walla Walla and Benton counties as well as a small portion of Sacajawea State Park in Franklin County. The NAA is defined as a square centered on the Wallula monitoring site (see Figure 1-1). The square measures 12 miles on a side for a total area of 144 square miles or 92,160 acres. The Universal Transverse Mercator (UTM) coordinates of the four corners (counterclockwise from the southwest corner) are as follows:

- Zone 11 342500E 5099975N
- Zone 11 362500E 5099975N
- Zone 11 362500E 5118600N
- Zone 11 342500E 5118600N

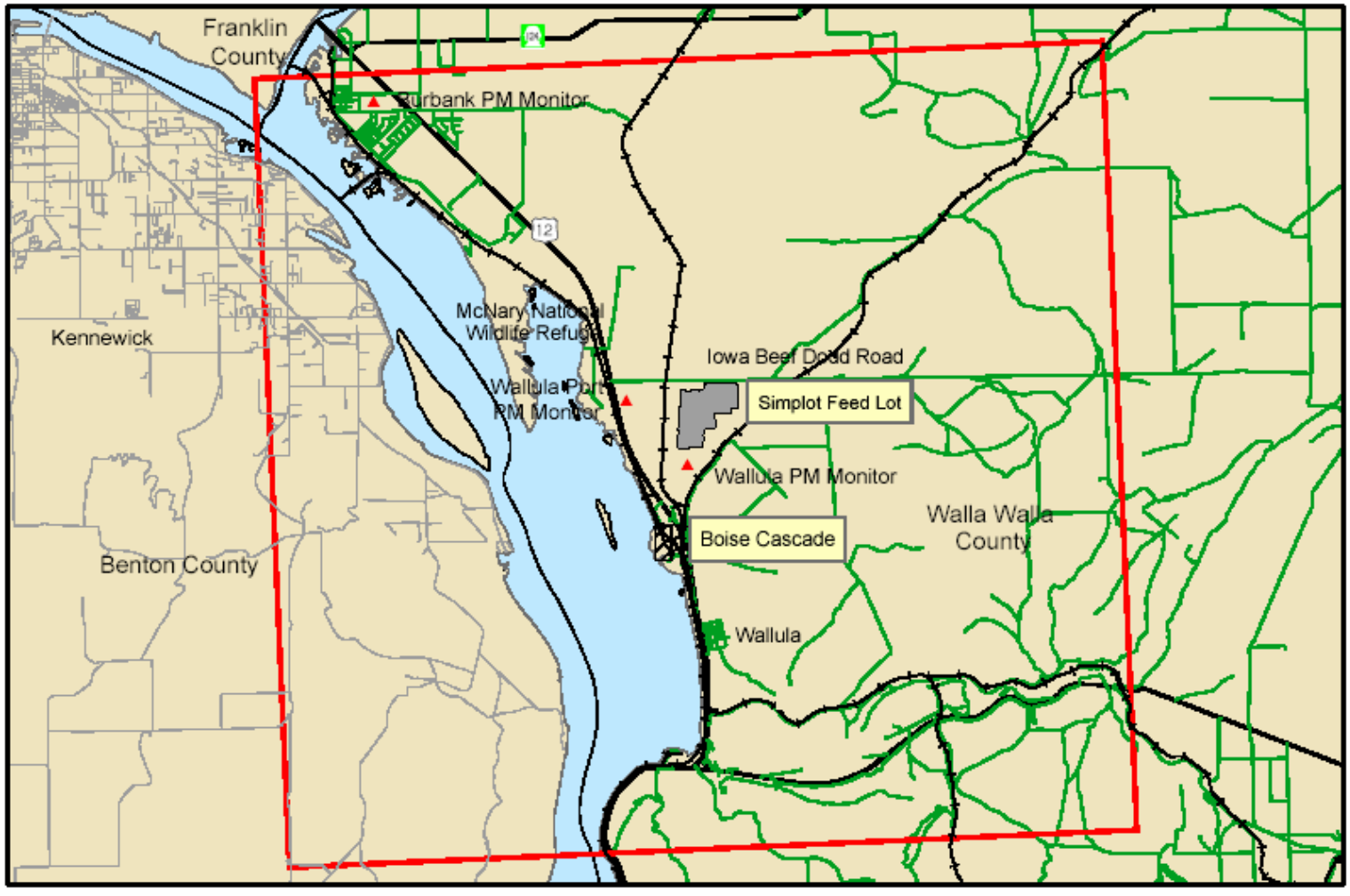
The major geographical feature of the NAA is Lake Wallula, a pool on the Columbia River behind McNary Dam. Lake Wallula, which extends from northern boundary to southern boundary approximately along a north-south axis, occupies about 18,430 acres or 12% of the NAA. The Horse Heaven Hills rise to more than 1100 feet above the Lake to the west. To the northeast, the gently rolling topography rises gradually to 300-350 feet above the level of the Lake by the east boundary of the NAA. Along the east and south boundaries are steep-sloped hills that rise 600 feet and more above Lake level. The Stateline Wind Project is located in the hills along and to the south of the south boundary of the NAA. These unnamed hills are an extension of the Horse Heaven Hills on the west side of Lake Wallula.

The Wallula NAA lies in the Central Basin, the lowest and driest section of eastern Washington. The driest part of the Basin is in the vicinity of the confluence of the Snake and Columbia Rivers (the northwest corner of the NAA) where annual precipitation is 7-to-9 inches. Summer precipitation is usually associated with thunderstorms. During July and August it is not unusual for four-to-six weeks to pass without measurable rainfall. During most of the year the prevailing wind direction is from the southwest or west.

The Wallula NAA is generally rural and agricultural. Prominent land uses include dryland and irrigated cropland, industrial sites and native shrub-steppe vegetation. There is only one major stationary source, a large pulp and paper mill. In the vicinity of the Wallula monitor, there is a large beef cattle feedlot with a capacity of about 88,000 head and a beef processing plant, which is among the top one or two employers in Walla Walla County. The NAA also has grain storage silos and a natural gas compression station in its Walla Walla County portion and a few minor sources in its Benton County portion. The McNary National Wildlife Refuge lies within the NAA.

The estimated population of the NAA is 4,800. The 2000 Census reported a population of 3,303 for the unincorporated town of Burbank where the regional schools are located.

Figure 1-1. Map of the Wallula PM_{10} Nonattainment Area.



Wallula Nonattainment Area

Wallula Nonattainment Area
Monitoring Site
N
0 0.5 1 2
Miles

Washington State Department of Ecology
Air Quality Program

1.6 PM_{10} Nonattainment and the Clean Air Act

Currently, the Wallula NAA is a serious PM_{10} nonattainment area. This status is a consequence of the interaction of monitored air quality data with the requirements of the Clean Air Act.

A PM_{10} monitor was established in Wallula on February 28, 1986 and began to record a series of exceedances of the 24-hour standard soon after. The first exceedance (211 $\mu g/m^3$) occurred on May 13, 1986. It was followed by five more exceedances during 1986 and an additional five in 1987. Maintenance of the annual standard has never been an issue in the Wallula NAA.

EPA established 24-hour and annual standards for PM_{10} on July 1, 1987. On August 7, 1987, EPA included Wallula in a list of Group I areas published in the Federal Register. Group I areas either exceeded or were likely to exceed the newly established PM_{10} standards. EPA required that each Group I area prepare a plan to bring the area into attainment with the PM_{10} standards.

On November 15, 1990, the 1990 Amendments to the Clean Air Act were enacted. Among its provisions, the Amendments mandated that Group I areas be designated nonattainment and classified as moderate. The Amendments required states with moderate PM_{10} nonattainment areas to submit a plan to attain the standard by November 15, 1991. The Amendments defined requirements for the attainment plans and established the attainment date of December 31, 1994. Ecology submitted a moderate attainment plan for the Wallula NAA to EPA by November 15, 1991.

EPA proposed granting the Wallula NAA a temporary three-year waiver of PM_{10} attainment date on December 8, 1995. Finalization of this proposal on January 27, 1997, waived the attainment date from December 31, 1994 to December 31, 1997. This extension allowed the Columbia Plateau PM-10 Project (CP^3) to perform technical analysis of windblown dust generation and evaluation of alternative control measures for windblown dust on the Columbia Plateau. CP^3 is jointly funded by EPA, Ecology and the U. S. Department of Agriculture. Along with the waiver, EPA approved certain elements of the moderate attainment plan and deferred action on the rest.

EPA issued the Natural Events Policy (NEP) on May 30, 1996. Under the NEP, exceedances due to clean-up from earthquakes and volcanic eruptions, wildfire and windblown dust are not considered when determining the attainment status of an area if certain conditions are met. The NEP has allowed the state and EPA to discount a number of exceedances caused by windblown dust. Because of the susceptibility of the fine agricultural soils to entrainment by the wind in the Wallula NAA and the surrounding area, the NEP continues to be significant for determining that the Wallula NAA is maintaining the PM_{10} standard.

On February 9, 2001, EPA published a Federal Register notice finding that Wallula had not met the standard by December 31, 1997. The Clean Air Act requires EPA to reclassify a nonattainment area from moderate to serious when EPA finds the area has not attained the PM_{10} standard by the moderate classification attainment date. The Wallula NAA was reclassified to serious effective March 12, 2001. Under the reclassification, Wallula's attainment date became

December 31, 2001. Due to the reclassification, the Wallula NAA was required to submit a new attainment plan meeting the serious area requirements of the 1990 Amendments to the Clean Air Act. The serious attainment plan was submitted to EPA in November 2004.

On September 3, 2002, EPA proposed to find that Wallula had attained the PM_{10} standard as of December 31, 2001, the attainment date for a serious PM_{10} nonattainment area. EPA also proposed to find that four exceedances that occurred between 1997 and 2000 were natural events. The discounting of exceedances for June 23, 1999 and August 10, 2000 as natural events allowed EPA to propose that Wallula had 0.0 expected exceedances for the three-year period 1999-2001 and thus attained the PM_{10} standard.

The finding of attainment was published in the Federal Register on October 22, 2002. The finding of attainment allows Wallula to avoid additional planning requirements that apply to nonattainment areas that fail to attain the PM_{10} standard by serious classification attainment date. This finding is not the same as redesignation of the Wallula nonattainment area to attainment. Before redesignation can occur, the serious attainment plan submitted the plan to EPA in November 2004 must be approved by EPA as meeting Clean Air Act requirements. The next step in achieving redesignation is submission of the Wallula maintenance plan to EPA. EPA approval of the Wallula maintenance plan will result in redesignation to attainment.

1.7 References

52 FR 24634, July 1, 1987. Revisions to the National Ambient Air Quality Standards for Particulate Matter. Environmental Protection Agency (EPA), Final rule.

52 FR 29383, August 7, 1987. PM_{10} Group I and Group II Areas. Environmental Protection Agency (EPA), List of PM_{10} Group I and Group II areas.

56 FR 56694, November 6, 1991. Designation of Areas for Air Quality Planning Purposes. Environmental Protection Agency (EPA), Final rule.

60 FR 63019, December 8, 1995. Approval and Promulgation of State Implementation Plans: Washington. Environmental Protection Agency (EPA), Notice of proposed rulemaking.

62 FR 3800, January 27, 1997. Approval and Promulgation of State Implementation Plans; Washington. Environmental Protection Agency (EPA), Final rule.

66 FR 9663, February 9, 2001. Clean Air Reclassification; Wallula. Washington Particulate Matter (PM-10) Nonattainment Area. Final rule.

67 FR 56249, September 3, 2002. Finding of Attainment for PM_{10}; Wallula PM_{10} Nonattainment Area, WA. Environmental Protection Agency (EPA), Proposed rule.

67 FR 62815, October 22, 2002. Finding of Attainment for PM_{10}; Wallula PM_{10} Nonattainment Area, WA. Environmental Protection Agency (EPA), Final rule.

Washington State Climatologist, undated. Climate of Washington. Available from http://www.wrcc.dri.edu/narratives/WASHINGTON.htm

Washington State Department of Ecology, November 1991. State Implementation Plan for Particulate Matter in the Wallula Study Area, A Plan for Attaining and Maintaining the National Ambient Air Quality Standard for PM_{10}.

Chapter 2. Demonstration of Attainment of the PM_{10} NAAQS

One requirement that Congress set for the redesignation of a nonattainment area to attainment is attainment of the National Ambient Air Quality Standard (NAAQS) that was being violated. This chapter demonstrates that the Wallula NAA attained the PM_{10} NAAQS by December 31, 2001—the attainment date established by the Clean Air Act for serious PM_{10} nonattainment areas. The chapter also reviews more recent air quality data to show that the area continues to attain the PM_{10} standard and thus remain eligible for redesignation.

2.1 Monitoring Network

For almost all of the period since monitoring was first started in 1986, Ecology's monitoring network for the Wallula NAA has consisted of a single monitoring site. This site is referred to in EPA's Air Quality System (AQS) database as Nedrow Farm/Wallula Junction (AQS site id no: 53-071-1001) and more commonly as the Wallula monitoring site. A Sierra Andersen SA1200 Federal Reference Method (FRM) monitor was operated at the site since January 1, 1989. Prior to that time, PM_{10} was measured with the predecessor models of Sierra Andersen PM_{10} monitors.

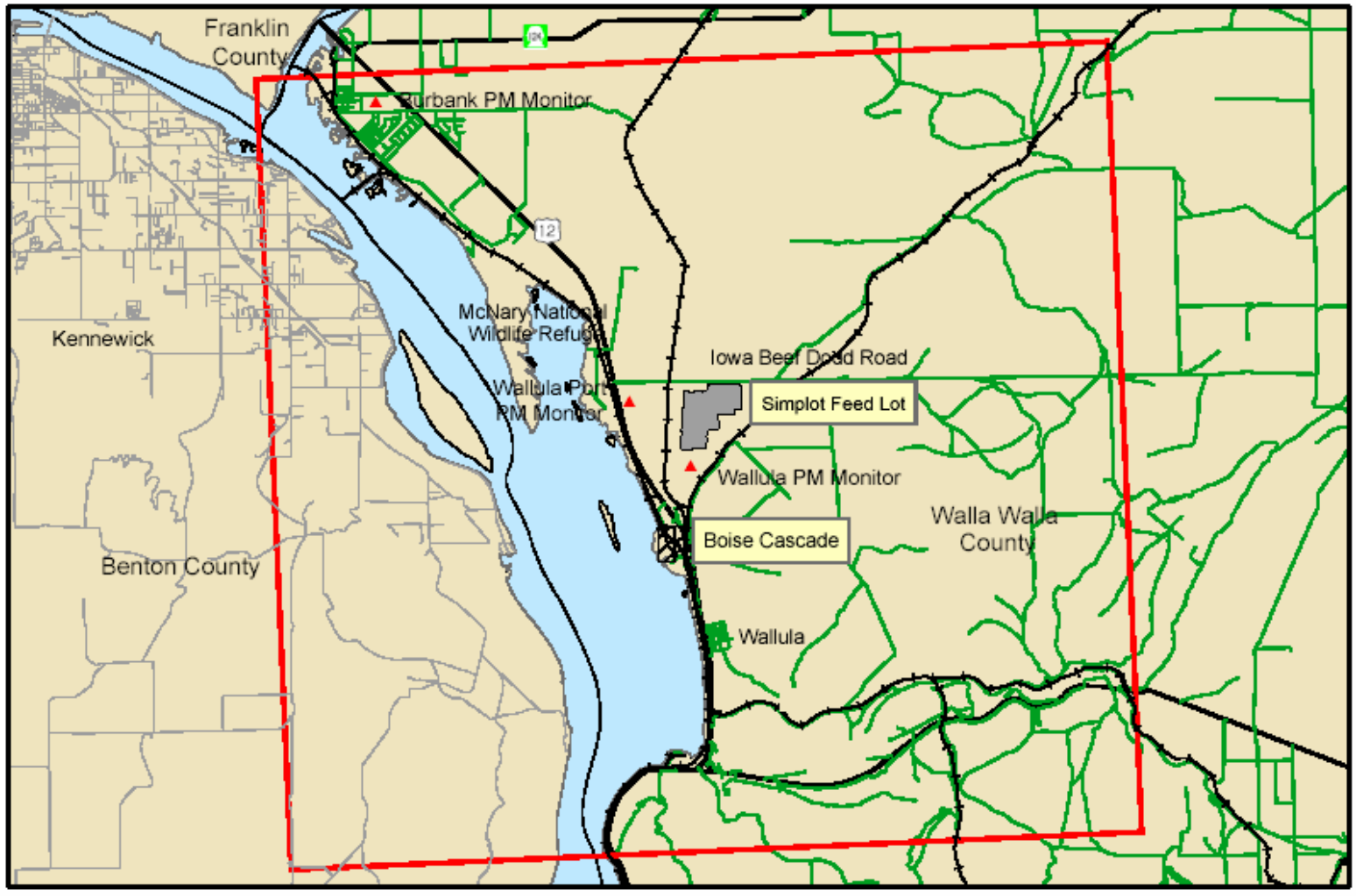
The Wallula monitoring site was part of Washington State's State and Local Air Monitoring System (SLAMS) PM_{10} network. The site met SLAMS network design and siting requirements set forth at 40 CFR Part 58, Appendices D and E. The site was terminated in October 2003 pursuant to an agreement with the landowner.

In anticipation of the closure of the Wallula monitoring site, Ecology established two sites as potential replacement sites in late 2002. Wallula Port (AQS site id no.: 53-071-0003) began operation in November 2002. The site is located more than a mile to the north and west of the Wallula monitor on property owned by the Port of Walla Walla. Burbank (AQS site id no.: 53-071-0006) began operation in December 2002. The monitor is located on the roof of the Vo-Tech/Ag Building at the Burbank schools in the unincorporated town of Burbank. Sierra Andersen SA1200 Federal Reference Method (FRM) monitors were established at both sites.

Figure 2-1 shows the locations of the three monitoring sites in the Wallula nonattainment area. Table 2-1 provides an overview of PM_{10} monitoring performed in the Wallula NAA.

In January 2004 Ecology provided EPA Region 10 with an analysis showing that the Burbank monitor was measuring the same air mass as the Wallula monitor. EPA accepted Ecology's finding and agreed to the continuation of the Burbank monitor for measuring air quality in the

Figure 2-1. Location of PM_{10} Monitoring Sites in the Wallula Nonattainment Area.



Wallula Nonattainment Area

Wallula Nonattainment Area
Monitoring Site
N
0 0.5 1 2
Miles

Washington State Department of Ecology
Air Quality Program

Table 2-1. Overview of PM_{10} Monitoring Sites in the Wallula Nonattainment Area

Sampling Dates	Sampler Type	Sampling Frequency
Wallulla (Nedrow Farm/Wallula Junction – AQS site id no: 53-071-1001)		
8/281986 – 7/15/1988 8/12/1988 – 12/30/1988 1/01/1989 – 10/24/2003	SA321 SA321A SA1200	every 2 days every 6 days every 6 days
Wallula Port (AQS site id no.: 53-071-0003)		
11/3/2002 – 02/27/2004	SA1200	every 3 days
Burbank (AQS site id no.: 53-071-0006)		
12/25/2002 – present	SA1200	every 3 days

Wallula NAA (see Appendix A). Ecology terminated the Wallula Port monitoring site in April 2004.

2.3 Adequacy of the Monitoring Network

A PM_{10} saturation study indicated that the Wallula monitoring site was an acceptable monitoring site for measuring maximum PM_{10} concentrations in the Wallula NAA. Washington State University performed the saturation study in the Wallula NAA for Ecology between July and September 2001. The saturation study did not find any location with PM_{10} values higher than the Wallula monitor.

The saturation study was performed to locate a replacement site for the Wallula monitor. The monitor was scheduled to be terminated in October 2003 under an agreement with the landowner on the removal of the monitor from his property. Ecology's analysis of saturation study results indicated that Dodd Road was the best location for a replacement sampler. If practical considerations precluded siting a monitor in the Dodd Road area, Burbank was an acceptable but less than ideal alternative.

After discussions with EPA, FRM PM_{10} monitors were located on Port of Walla Walla property south of Dodd Road (the Wallula Port monitoring site) and at the Burbank schools in Burbank (the Burbank monitoring site).

In January 2004, Ecology completed an evaluation comparing data from each of the two sites with data collected at the Wallula monitor. The results indicated that Burbank was measuring the same air mass as the Wallula monitor. EPA concurred with Ecology's recommendation that the Burbank monitor be the replacement site for the Wallula monitor.

The saturation study, Ecology's analysis of the study, Ecology's evaluation of potential replacement monitoring sites and EPA's approval of the Burbank monitoring site are found in Appendix A.

2.4 Monitored Air Quality and Natural Events

The remainder of this chapter provides an overview of monitored air quality in the Wallula NAA from 1999 through 2003 and an evaluation of attainment of the PM_{10} standard in the NAA. The overview begins with 1999, because determination of attainment of the 24-hour and annual PM_{10} NAAQS are based upon three calendar years of data. Since the Clean Air Act established December 31, 2001 as the attainment date for PM_{10} nonattainment areas such as Wallula that are reclassified from moderate to serious, the three-year period encompasses 1999 through 2001. Since the Wallula Port and Burbank monitors were started in November and December 2002, respectively, the discussion through 2002 focuses exclusively on the Wallula monitor.

No discussion of monitored air quality in Wallula can avoid the subject of natural events. EPA's Natural Events Policy (NEP) issued in 1996 allows exceedances due dust raised by high winds to be treated as uncontrollable natural events when the dust originated from nonanthropogenic sources or from anthropogenic sources controlled with BACM. Exceedances due to high wind natural events are discounted—that is, excluded from consideration—for the purpose of determining the attainment status of an area when the conditions set forth in the NEP are met.

The NEP requires the state to develop a natural events action plan (NEAP) that serves as the framework for state and local air authority actions for protecting public health, informing the public of unhealthy air quality and implementing control measures that will result in fewer violations of the standard. Ecology developed *Natural Events Action Plan for High Winds in the Columbia Plateau* in 1998 to address high wind natural events in the Wallula NAA and elsewhere on the Columbia Plateau of eastern Washington. Ecology's revised NEAP, *Columbia Plateau Windblown Dust Natural Events Action Plan*, was published in 2003.

The NEP requires the state to develop documentation for each natural event that establishes a clear, causal relationship between the natural event and the exceedance. From 1999 through 2003, five natural events have affected monitored concentrations in the Wallula NAA. EPA has flagged these data points. Table 2-2 summarizes the natural events that occurred between 1999 and 2004.

Table 2-2. High Wind Natural Events in the Wallula NAA, 1999-2003

Year	Date	PM_{10} Concentration ($\mu g/m^3$)			Documented?	EPA Flagged?
		Wallula	Wallula Port	Burbank		
1999	June 23	297			Yes	Yes
2000	August 10	215			Yes	Yes
2001	n/a					
2002	September 29	197			Yes	Yes
2003	October 30			282	Yes	Yes
2003	November 11		218		Yes	Yes
2004	April 17		299	249	Yes	Yes

2.5 Attainment of the 24-Hour Standard

This section assesses attainment of the 24-hour standard through a systematic examination of data from 1999 through 2002 at the Wallula monitoring site and a review of data from all sites for 2003.

The 24-hour standard is met when there is no more than one exceedance per year when evaluated over a three-year period. The first step in an evaluation is a determination of the estimated number of exceedances for each calendar year by adjusting the number of monitored exceedances for the monitoring schedule. Wallula has no exceedances in any year between 1999 and 2002 and thus the estimated number of exceedances for each year is 0 (Table 2-3).

Table 2-3. Estimated Exceedances by Calendar Year, 1999-2002

Year	Maximum Value (Date)	2nd Maximum Value (Date)	Days Monitored	Number of Exceedances	Estimated Number of Exceedances
1999	91 (7/11)	77 (3/7)	53	0	0
2000	126 (6/29)	100 (6/17)	58	0	0
2001	109 (6/12)	99 (6/30)	59	0	0
2002	134 (5/2)	83 (9/23)	56	0	0

The second step in the evaluation is a determination of the expected number of exceedances per year. This is the average of the estimated number of exceedances for a three-year period. Wallula has no expected exceedances per year in the three-year periods 1999-2001 and 2000-

2002 and thus attains the standard (Table 2-4). These results are consistent with EPA's findings that Wallula attained the standard as of December 31, 2001.

Table 2-4. Attainment of the 24-Hour Standard, 1999-2002

3-Year Period	Annual Estimated Exceedances			Average Number of Expected Exceedances	Attainment?
1999-2001	1999 0	2000 0	2001 0	0	YES
2000-2002	2000 0	2001 0	2002 0	0	YES

Three monitoring sites operated in the Wallula NAA during 2003: Wallula, Burbank and Wallula Port. Both Burbank and Wallula Port operated the entire year; Wallula operated only through October and was permanently removed in November. The Wallula monitor had inadequate data completeness (less than 75 percent) for determining attainment of the PM_{10} standard during the third and fourth quarters of the year.

Data from the NAA monitoring sites are analyzed below (Table 2-5) to determine whether the nonattainment area continued to attain the standard during 2003. Both Burbank and Wallula Port monitored an exceedance due to a high wind natural event. In addition, the maximum concentration below the level of the standard at Wallula Port occurred on October 30, 2003, the same day as the Burbank natural event exceedance, and was flagged and documented as a natural event. All other data at the three sites were below the 24-hour PM_{10} standard. Both Wallula and Burbank had similar maximum and second maximum concentrations both in magnitude and time of occurrence.

Burbank and Wallula Port met the 24-hour standard. Since an analysis of data indicated that Wallula and Burbank measure the same air mass, Burbank's attainment of the standard serves as an indicator that standard was attained at the Wallula site. EPA approved Burbank as the replacement site for the Wallula monitoring site in 2004.

From the analyses presented above, the State of Washington concludes that the Wallula NAA attained the 24-hour PM_{10} standard in 2001 as required by the Clean Air Act. The NAA maintained the standard in 2002. Monitoring data indicate that the area continued to meet the standard in 2003.

2.6 Attainment of the Annual Standard

Attainment of the annual PM_{10} standard has never been an issue for the Wallula NAA. The area was identified as a Group I area and later declared nonattainment on the basis of violations of the

Table 2-5. Overview of 2003 Monitoring in the Wallula NAA and Attainment of the 24-Hour PM_{10} Standard.

	Wallula	Burbank	Wallula Port
Sampling Frequency	every 6 days	every 3 days	every 3 days
First 2003 Sampling Date	1/3	1/3	1/3
Last 2003 Sampling Date	10/24	12/29	12/29
75% Data Completeness			
• **First Quarter**	Yes	Yes[a]	Yes[a]
• **Second Quarter**	Yes	Yes	Yes
• **Third Quarter**	No	Yes	Yes
• **Fourth Quarter**	No	Yes	Yes
Natural Events (Date)	n/a	282 µg/m^3 (10/30)[b]	218 µg/m^3 (11/11)[b] 134 µg/m^3 (10/30)[b]
Maximum Concentration (Date)	68 µg/m^3 (9/6)	63 µg/m^3 (9/6)	100 µg/m^3 (10/12)
2nd Maximum Concentration (Date)	57 µg/m^3 (9/30)	63 µg/m^3 (10/3)	86 µg/m^3 (10/21)
Attainment of the 24-Hour Standard	Indeterminate	YES	YES

[a] For Quarter 1, 2000, the April 1999 *Guideline on Data Handling Conventions for the PM NAAQS* was used to distinguish between make-up days (which do count toward data completeness) and extra sampling days (which do not).

[b] Ecology has documented these dates as natural events; both Ecology and EPA have flagged the data.

24-hour standard. Similarly, the Wallula NAA was found to have failed to attain the PM_{10} standard and reclassified to serious on the basis of failing to meet the 24-hour standard.

This section reviews attainment of the annual standard in 2001, the attainment year specified by the Clean Air Act for an area for an area reclassified to serious, and continued attainment in 2002 and 2003. Attainment in 2001 and 2002 is based on data from the Wallula monitor; attainment in 2003 is discussed on the basis of all three monitoring sites that operated in the Wallula NAA during that year.

The annual PM_{10} standard is achieved when the expected annual arithmetic mean PM_{10} concentration over a three-year period is equal to or less than 50 µg/m^3. The expected annual arithmetic mean concentration is calculated by averaging the annual means for a three calendar-year period. The annual mean is calculated by averaging the four quarterly means of PM_{10} concentrations as specified in 40 CFR Part 50, Appendix K. Calculation of the annual mean from the quarterly means allows for the possibility of seasonality in PM_{10} concentrations.

Table 2-6 summarizes the quarterly and annual mean concentrations for 1999-2002 and Table 2-7, the expected annual average concentrations for 1999-2001 and 2000-2002. The annual averages of 31 and 30 µg/m^3 respectively are well below the annual standard of 50 µg/m^3. These results indicate that the Wallula NAA met the annual standard as of its 2001 attainment date and maintained the annual standard in 2002.

Table 2-6. Wallula Quarterly and Annual Means, 1999-2002

Period	Quarterly and Annual Means (µg/m^3)			
	1999	**2000**	**2001**	**2002**
First Quarter	21.6	12.8	16.6	18.0
Second Quarter	33.4	42.2	32.5	35.2
Third Quarter	55.0	39.7	45.8	47.3
Fourth Quarter	26.6	19.5	20.4	23.3
ANNUAL	**34.2**	**28.6**	**28.8**	**31.0**

Table 2-7. Wallula Expected Annual Means, 1999-2001 and 2000-2002

3-Year Period	Annual Means (µg/m^3)				Expected Annual Mean (µg/m^3)
	1999	**2000**	**2001**	**2002**	
1999-2001	34.2	28.6	28.8		**31**
2000-2002		28.6	28.8	31.0	**30**

All three NAA monitoring sites were examined to determine if the annual standard continued to be met in 2003. Since the Wallula monitoring site had adequate data completeness only for the first two quarters, the three-year analysis of those data could not be continued beyond 2002. The quarterly means shown in Table 2-8 for 2003 are similar to those shown in Table 2-6 for the Wallula monitoring site for 1999-2002. The 2003 annual means for Burbank and Wallula Port are similar for annual means at the Wallula monitor for 1999-2002. Due to these similarities, the State of Washington concludes that Wallula continues to maintain the annual standard.

The remainder of this maintenance plan focuses on the 24-hour standard. The annual standard was not a factor in the identification of Wallula as a Group I area in 1987, the designation of Wallula as nonattainment in 1990 or the reclassification of Wallula to serious in 2001. Data for the 2001 attainment date established by the Clean Air Act show that Wallula attained the annual standard. Wallula maintained the annual standard in 2002. Data from 2003, including data from the replacement monitoring site in Burbank, are consistent with continued maintenance of the annual standard.

Table 2-8. Quarterly and Annual Means, 2003

Period	Quarterly and Annual Means (µg/m^3)		
	Wallula	**Burbank**	**Wallula Port**
First Quarter	14.1	13.6	13.1
Second Quarter	19.8	24.2	26.4
Third Quarter	n/a	40.8	47.6
Fourth Quarter	n/a	23.6	34.7
Annual	n/a	25.6	30.5

2.7 References

Claiborn, Candis, January 3, 2002. PM_{10} Saturation Study in Wallula, WA. Washington State University.

U. S. Environmental Protection Agency, Region 10, November 4, 2004. Letter from Mahbubul Islam, Manager, State and Tribal Programs Unit, to Mike Ragan, Ecology, re: Approval of the Burbank PM_{10} Monitoring Site as the Representative Monitor for the Wallula PM_{10} Nonattainment Area.

Washington State Department of Ecology, March 1998. *Natural Events Action Plan for High Wind Events in the Columbia Plateau*.

Washington State Department of Ecology, Air Quality Program, March 2002. Analysis of 2002 Wallula Saturation Study.

Washington State Department of Ecology, 2003. *Columbia Plateau Windblown Dust Natural Events Action Plan*. 03-02-014.

Washington State Department of Ecology, Air Quality Program, January 5, 2004. Evaluation of Two Candidate Sites for Replacement of the Wallula PM_{10} Monitoring Site.

Chapter 3. Summary of Fully Approved SIP

Among the requirements that Congress set for redesignation of a nonattainment area to attainment are a fully approved attainment plan, fully approved State Implementation Plan (SIP) requirements and improvement in air quality due to permanent and enforceable emission reductions. When EPA adopts or revises a federal health-based ambient air quality standard such as the PM_{10} standard, the Clean Air Act requires each state to develop a SIP to implement and enforce the standard. The SIP consists of the state's body of rules for enforcing a health-based standard as well as plans to bring any areas not attaining the standard into attainment. This chapter provides an overview of the approval status of the moderate and serious attainment plans for the Wallula PM_{10} NAA, related SIP requirements and a description of permanent and enforceable emission reductions.

3.1 Summary of the Moderate Attainment Plan

The Clean Air Act required the State of Washington to prepare a plan for attaining the PM_{10} standard in the Wallula NAA. Shortly after EPA adopted the PM_{10} standard in 1987, EPA identified a number of areas that either were violating the PM_{10} standard or were likely to violate the PM_{10} standard. EPA required these Group I areas, which included Wallula, to develop a plan to attain the standard. The 1990 Amendments to the Clean Air Act reinforced this requirement. The Amendments required EPA to designate all Group I areas *nonattainment* and classify them *moderate*. PM_{10} nonattainment area provisions of the 1990 Amendments specified the requirements for attainment plans for moderate PM_{10} nonattainment areas. The Clean Air Act requires states to submit attainment plans to EPA for approval.

An attainment plan for a moderate PM_{10} nonattainment area must provide an inventory of PM_{10} sources and the amounts of pollutant emissions, project the inventory to the attainment year, apply a control strategy, and demonstrate that the control strategy is adequate to bring the area into attainment. The plan must include contingency measures that are implemented if the area fails to attain the standard by the attainment date.

A full listing of the components of a moderate PM_{10} attainment plan is as follows:

- a comprehensive, accurate, current inventory of actual PM_{10} emissions from all sources as of 1990
- provisions for implementation of Reasonably Available Control Measures (RACM) and Reasonably Available Control Technology (RACT)
- a demonstration that the plan provides for attainment of the PM_{10} standard by the attainment date of December 31, 1994
- contingency measures to be implemented if the area fails to meet the PM_{10} standard by the attainment date

- quantitative milestones which are to be achieved every three years and which demonstrate reasonable further progress (RFP) toward attainment by December 31, 1994
- New Source Review rules for permitting major new sources and major modifications to existing sources
- a request for exemption from controls on PM_{10} precursors emitted from major stationary sources when PM_{10} precursors from these sources do not contribute significantly to the PM_{10} levels that exceed the standard
- a commitment to demonstrate that the control measures have been implemented and the milestone has been met

Table 3-1 summarizes moderate area attainment plan requirements, the dates of submittals to EPA, and the approval status.

3.2 Summary of the Serious Attainment Plan

The moderate attainment plan is not the only attainment plan produced by the State of Washington that is applicable to the Wallula NAA. When EPA reclassified the Wallula NAA from moderate to *serious* in 2001, the PM_{10} nonattainment area provisions of the Clean Air Act required a new attainment plan that addresses (1) continuing requirements already applicable to the area due to its previous moderate classification, (2) additional requirements applicable to the area due to its reclassification as serious, and (3) certain general attainment plan requirements. A listing of the attainment plan requirements is as follows:

- a comprehensive, accurate, current inventory of actual PM_{10} emissions from all sources
- provisions for implementation of Reasonably Available Control Measures (RACM) and Reasonably Available Control Technology (RACT)
- provisions for implementation of Best Available Control Measures (BACM) and Best Available Control Technology (BACT)
- a demonstration that the plan provides for attainment of the PM_{10} standard by the attainment date of December 31, 2001
- a Motor Vehicle Emissions Budget (MVEB) for demonstrating regional transportation conformity
- contingency measures to be implemented if the area fails to meet the PM_{10} standard by the December 31, 2001 attainment date
- New Source Review rules for permitting major new sources and major modifications to existing sources
- revision to the definition of a major source of PM_{10}
- a request for exemption from controls on PM_{10} precursors emitted from major stationary sources if PM_{10} precursors from these sources do not contribute significantly to the PM_{10} levels that exceed the standard

Table 3-1. Approval Status of the Moderate PM_{10} Attainment Plan

Requirement	Submittal Date	Federal Register Action
Emission inventories • 1990 base year • 1994 projected	November 15, 1991 Allowables June 1, 1995 Revised September 6, 1995	Deferred (62 FR 3800, January 27, 1997)
RACM, Agricultural Windblown Dust (Food Security Act soil conservation requirements, e.g., farm plans and the Conservation Reserve Program)	November 15, 1991 Additional information: • May 18, 1993 • June 23, 1994	Approved (62 FR 3800, January 27, 1997)
RACM, Simplot Feedlot (daily spraying during dry conditions)	November 15, 1991 Installation and operation of a watering system reported, June 23, 1994	Approved (62 FR 3800, January 27, 1997)
RACT for Boise Cascade Pulp and Paper Mill (existing controls plus paving of the unpaved haul road used by heavy duty trucks delivering wood chips)	November 15, 1991 Completion of road paving reported, June 23, 1994	Approved (62 FR 3800, January 27, 1997)
Attainment Demonstration	November 15, 1991 Revised June 1, 1995 Revised September 6, 1995	Deferred (62 FR 3800, January 27, 1997)
Contingency Measure (water spraying during dry periods at the Boise Cascade composting facility)	November 15, 1991	Deferred (62 FR 3800, January 27, 1997)
Quantitative Milestones which demonstrates reasonable further progress (RFP) toward attainment by December 31, 1994	November 15, 1991 Revised June 1, 1995 Revised September 6, 1995	Not required in view of the fact that the area is not required to meet RFP because in 1998 EPA would determine if the area would receive a permanent waiver or be reclassified to serious (62 FR 3800, January 27, 1997)
New Source Review	January 22, 1993 Revised March 8, 1994	Approved (60 FR 28726, June 2, 1995)
PM_{10} Precursors: Exclusion from Requirements	November 15, 1991	Approved (62 FR 3800, January 27, 1997)

The serious PM_{10} attainment plan for the Wallula NAA did not set a MVEB. Instead, the State made a demonstration that motor vehicles do not now or in the future contribute significantly to nonattainment and requested an exemption from regional analysis for transportation conformity. Even when EPA grants this exemption, transportation conformity requirements for project-level analysis and consultation will still apply.

The serious attainment plan did not address requirements for RACM and RACT and New Source Review permitting rules, since the moderate attainment plan for the Wallula NAA had already satisfied these requirements.

The serious attainment plan for Wallula provides information on the state-adopted rule revising the definition of a major source in a serious PM_{10} nonattainment area and requests exclusion from control of PM_{10} precursors. When a nonattainment area is reclassified to serious, the Clean Air Act mandates that the threshold for classification as a major stationary source be revised from a potential to emit of 100 tons per year to 70 tons per year. Reclassification also means that control of PM_{10} precursors from major stationary sources needs to be reexamined. The Clean Air Act mandates precursor control unless EPA determines that precursors do not contribute significantly to exceedances of the PM_{10} standard.

Table 3-2 summarizes serious area attainment plan requirements and the document that addresses the requirement. Ecology submitted the serious attainment plan to EPA in November 2004. Full approval is anticipated.

There is one exception to the requirement for full SIP approval of applicable requirements. That involves transportation conformity. Even though Ecology requested exclusion from transportation conformity in the serious attainment plan and this maintenance plan, the requirement for SIP-approved transportation conformity rules still stands. EPA however has determined that the lack of approved rules is not an impediment to redesignation, because the state must still follow federal conformity rules.

3.3 Description of Permanent and Enforceable Emission Reductions

Improvements in the air quality of a nonattainment area are related to permanent and enforceable emission reductions. Table 3-3 lists the permanent and enforceable emission reductions that have been applied to the Wallula NAA. Process controls at the pulp and paper mill and at the beef processing facility along with paving at the mill result in permanent and enforceable emissions reductions that are not dependent upon meteorology or economic conditions.

Meteorological factors such as wind, rainfall and evapotranspiration play a role in the formation of fugitive dust in the Wallula area. The dust control plans for the beef cattle feedlot and the composting facility establish management practices to minimize fugitive dust despite the

Table 3-2. Overview of Serious PM_{10} Attainment Plan Requirements

Requirement	Document Addressing the Requirement
Emission Inventory, base-year 1997	Serious attainment plan (Ecology, 2004)
BACM, Agricultural Tilling	*Columbia Plateau Windblown Dust Natural Events Action Plan* (Ecology, 2003
BACM for composting facility and landfill at Boise Paper Solutions, Wallula (dust control plan)	Serious attainment plan
BACT for IBP (emissions controls limiting the potential to emit to 22.23 T/y)	Serious attainment plan
BACM for Simplot Feeders (control of fugitive dust with a sprinkler system supplemented by manure management)	Serious attainment plan
Attainment Demonstration (July 3, 1997 exceedance)	Serious attainment plan
Exclusion from Transportation Conformity	Serious attainment plan
Contingency Measures (Process for Improved Identification of Source Activities during an Exceedance)	Serious attainment plan
Revision of Major Source Definition to 70 Tons per Year	New Source Review SIP submittal (Ecology, June 2004)
Request for Exclusion from PM_{10} Precursor Control	Serious attainment plan

meteorological conditions. For instance, the sprinkler system at the feedlot operates in the driest period of year (April 1 to October 15), has adjustable run times depending upon the condition of pens, rainfall, evapotranspiration and other factors, and can be operated 24 hours a day if necessary. The dust control plan for the compost facility calls for watering every day the area is in operation with additional watering on days of high traffic or high temperatures. The machines that mix the windrows of compost are equipped with rubber drapes to reduce fugitive dust and are operated at the less windy times of day. No windrow mixing occurs on high wind days. The active face of the landfill where the finished compost is stored is kept to a minimum necessary to accommodate the waste stream and thereby reduce the surface open to wind action and potential dust generation. Compost is not placed in the landfill on windy days.

Table 3-3. Permanent and Enforceable Emission Reductions in the Wallula NAA.

Facility	Permanent and Enforceable Emission Reductions
Boise Paper Solutions–Wallula Mill, pulp and paper mill	• Paved haul road for heavy duty trucks delivering wood chips • Lowest Available Emission Rate (LAER) on the No. 3 Recovery Furnace
Boise Paper Solutions, Wallula, composting operations	• Fugitive Dust Control Plan
Tyson Fresh Meats (formerly, IBP) beef processing facility	• BACT on PM_{10} emission controls
Simplot Feeders Limited Partnership beef cattle feedlot	• Fugitive Dust Control Plan satisfying BACM through a sprinkler system and manure management, especially removal of dry manure accumulations from cattle pens in the summer

In addition, BACM has being applied to agricultural fields in the Wallula NAA and surrounding areas to reduce the generation of windblown dust. Ecology's *Columbia Plateau Windblown Dust Natural Events Action Plan* defines BACM as U. S. Department of Agriculture Conservation Title Programs—such as the Conservation Reserve Program (CRP)—supplemented by incentive-based application of wind-erosion conservation practices, which are also referred to as best management practices (BMPs).

3.4 References

60 FR 28726, June 2, 1995. Approval and Promulgation of State Implementation Plans: Washington Approval of Section 112(l) Authority; Operating Permits; Washington. Environmental Protection Agency (EPA), Final rule.

60 FR 63019, December 8, 1995. Approval and Promulgation of State Implementation Plans: Washington. Environmental Protection Agency (EPA), Notice of proposed rulemaking.

62 FR 3800, January 27, 1997. Approval and Promulgation of State Implementation Plans; Washington. Environmental Protection Agency (EPA), Final rule.

Simplot Feeders Limited Partnership, December 1, 2003. Fugitive Dust Control Plan (cattle feedlot operation, Wallula, Washington).

Washington State Department of Ecology, November 1991. State Implementation Plan for Particulate Matter in the Wallula Study Area, A Plan for Attaining and Maintaining the National Ambient Air Quality Standard for PM_{10}.

Washington State Department of Ecology, June 18, 1993. Letter from Joseph R. Williams to Jim McCormick, EPA Region 10, transmitting a technical update to Appendix E, the discussion of Reasonably Available Control Measures.

Washington State Department of Ecology, June 23, 1994. Letter from Joseph R. Williams to Jim McCormick, EPA Region 10, transmitting documentation of road paving at the Boise Cascade Mill and documentation of construction and operation of a watering system at the Simplot Feeders beef cattle feed lot and requesting a 3-year waiver of the December 31, 1994 attainment date for the Wallula PM_{10} nonattainment area.

Washington State Department of Ecology, June 1, 1995. Letter from Joseph R. Williams to Philip G. Millam, EPA Region 10, transmitting information on allowable emissions and revising the attainment and 3-year maintenance demonstrations.

Washington State Department of Ecology, September 6, 1995. Letter from Joseph R. Williams to Michael A Bussell, EPA Region 10, transmitting the corrected Wallula PM_{10} Projected Inventory for 1994 and 1997.

Washington State Department of Ecology, December 18, 1998. Air Operating Permit No. 000369-7, Boise Cascade Corporation, Wallula, Washington.

Washington State Department of Ecology, May 8, 2002. In the Matter of: Boise Cascade Corporation, Wallula Mill, P.O. Box 500, Wallula, WA 99363, Order No. DE02AQIS-3588.

Washington State Department of Ecology, December 6, 2002. In the Matter of Approving a New Contaminant Source for IBP, Inc., Order No. 02AQER-5074.

Washington State Department of Ecology, 2003. *Columbia Plateau Windblown Dust Natural Events Action Plan* (Publication No. 03-02-014).

Washington State Department of Ecology, December 18, 2003. Letter from Gregory S. Flibbert to Ron Parks, J. R. Simplot Company, approving Wallula feedlot fugitive dust control plan dated December 1, 2003.

Washington State Department of Ecology, October 2004. *A Plan for Attaining Particulate Matter (PM_{10}) Ambient Air Quality Standards in the Wallula Serious Nonattainment Area* (Publication No. 04-02-022).

Chapter 4. Air Quality Maintenance Plan

This chapter provides the plan for maintaining the PM_{10} standard ten years after the Wallula PM_{10} nonattainment area has been redesignated to attainment. The maintenance plan was developed to meet Section 175A of the Clean Air Act and the EPA memorandum titled "Procedures for Processing Requests to Redesignate Areas to Attainment" (EPA, 1992). The plan includes the justification for excluding the Wallula area from regional transportation conformity requirements.

4.1 Attainment Emission Inventory

EPA's procedures for redesignation requests (EPA, 1992) require "an attainment emissions inventory to identify the level of emissions in the area which is sufficient to attain the NAAQS." EPA notes that "the attainment inventory will generally be the actual inventory at the time the area attained the standard."

Ecology developed a comprehensive, accurate inventory of actual point, area and mobile source emissions during 2002 for this maintenance plan. The review of monitoring data in Chapter 2 shows that the Wallula NAA attained the standard as of December 31, 2001—the attainment date for a serious PM_{10} nonattainment area—and continued to meet the PM_{10} standard in 2002. Since the Comprehensive Emissions Report Rule (40 CFR 51, Subpart A) already required 2002 county-level inventories for the entire state, it was relatively easy for Ecology to extend this work to compile a more detailed 2002 inventory for the nonattainment area.

The attainment inventory provides both annual emissions and emissions for a typical PM_{10} season day. Since elevated PM_{10} concentrations are most likely to occur from June through September, this period was defined as the typical PM_{10} season. The daily inventory for the typical PM_{10} season reflects low wind conditions. Examination of Wallula exceedances from 1995 to the present led to the conclusion that with one exception (which was addressed in the serious PM_{10} attainment plan), all are windblown dust natural events. Windblown dust events are being addressed through the *Columbia Plateau Windblown Dust Natural Events Action Plan*.

Ecology prepared the attainment inventory according to standard procedures. First, Ecology prepared an Inventory Preparation Plan and Quality Assurance Plan (IPP) to guide inventory development and submitted it to EPA. The IPP, which addressed both the 2002 attainment inventory and a 2015 projected inventory, was approved by EPA. After Ecology developed the draft inventories, they were submitted to EPA for review. The final IPP and the maintenance plan inventories are found in Appendix B. The projected 2015 inventory is discussed in section 4.3 below.

The attainment area inventory reflects both the predominantly rural, agricultural nature of the nonattainment area and a significant proportion of industrial emissions from the pulp and paper

mill and several minor sources. Agricultural tilling accounts for over half of total emissions. Together large and small industrial sources comprise almost 40 percent of the inventory. The remainder of the inventory is attributable to mobile sources. The inventory is summarized in Table 4-1 and Figure 4-1.

Table 4-1. 2002 Attainment PM_{10} Emissions Summary for a Typical PM_{10} Season Day

Category	Tons per Year	Pounds per PM_{10} Season Day	Percent
POINT SOURCES			
Pulp and Paper Mill	172	941	18.5
Mill Fugitives	15.4	86	1.7
Compost Facility	1.5	8	0.2
Total	189	1,035	20.3
AREA SOURCES			
Small Stationary Sources	129	965	19.0
Agricultural Tilling	493	2,606	51.2
Paved Road Dust	50	305	6.0
Unpaved Road Dust	18	124	2.4
Agricultural Field Burning	1	0	0.0
ONROAD MOBILE SOURCES			
Onroad Mobile Sources	9	53	1.0
TOTAL ALL SOURCES	979	5,087	100.0

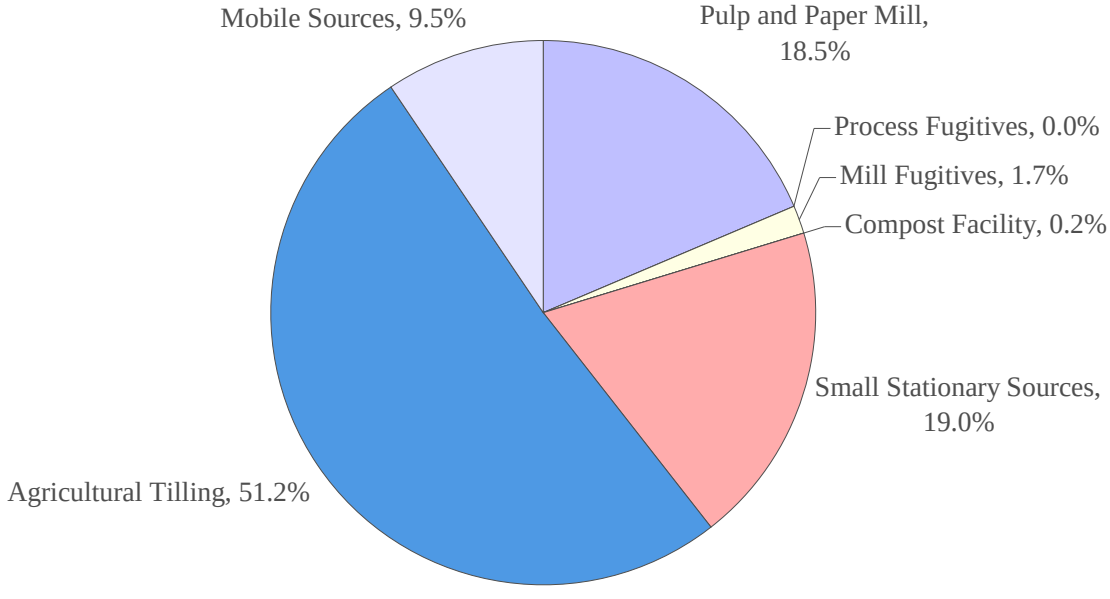
4.2 Additional Control Measures Necessary to Maintain the NAAQS

Based on the maintenance demonstration presented in the following section, no new controls are necessary to maintain the standard.

4.3 Maintenance Demonstration

Section 175A of the Clean Air Act requires a state to demonstrate that a nonattainment area will maintain the PM_{10} standard for at least 10 years after redesignation to attainment. EPA requires a state to project the expected PM_{10} concentration at the end of the maintenance period.

Figure 4-1. 2002 Attainment Inventory Overview for a Typical PM_{10} Season Day (5,087 ppd)



Maintenance is demonstrated when the projected concentration is less than or equal to the 24-hour PM_{10} NAAQS of 150 $\mu g/m^3$. This section provides the demonstration of maintenance. The section begins with an overview of projected PM_{10} emissions in 2015.

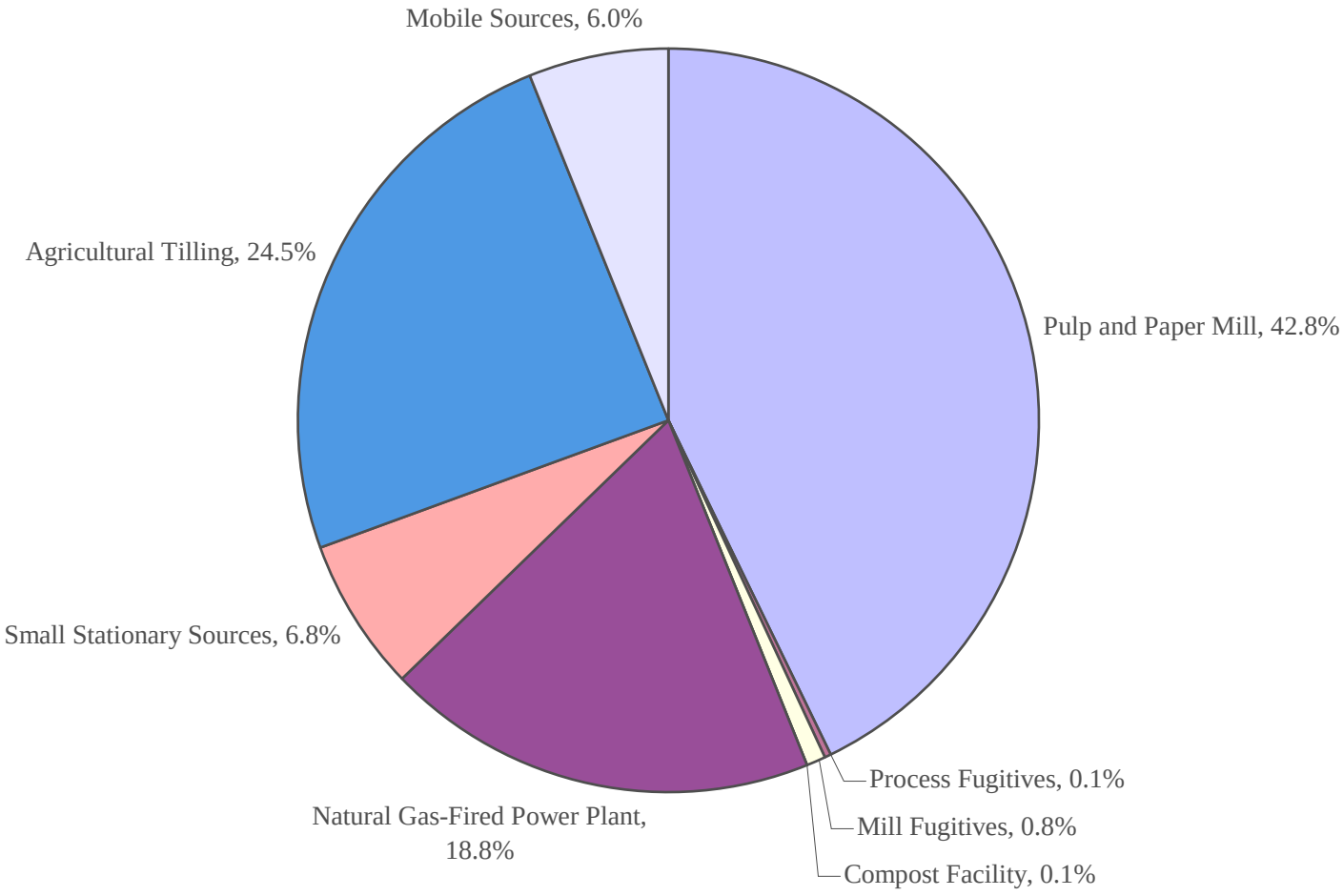
Projected 2015 Emission Inventory

Ecology prepared the projected emission inventory for 2015 for the Wallula NAA according to the methodology specified in the IPP. The projected inventory is based upon allowable emissions for point sources and projected future emissions for area and mobile sources. EPA requires the use of allowable emissions in projected inventories because the allowable emissions for a point source are the maximum amount of emissions that a facility may legally release under its permit and thus provide a worst-case estimate of future emissions. Actual emissions from an industrial facility normally are lower, often much lower, than the allowable emissions. The projected 2015 inventory is presented in Table 4-2 and Figure 4-2 below. The IPP and the detailed 2015 inventory are found in Appendix B.

Table 4-2. Projected 2015 PM_{10} Emissions Summary for a Typical PM_{10} Season Day

Category	Tons per Year	Pounds per PM_{10} Season Day	Percent
POINT SOURCES			
Pulp and Paper Mill	861	4,722	41.7
Process Fugitives	3	18	0.2
Mill Fugitives	16	86	0.8
Compost Facility	2	8	0.1
Mill Total	882	4,834	42.7
Natural Gas-Fired Power Plant	379	2,089	18.4
Point Sources Total	1,261	6,923	61.1
AREA SOURCES			
Small Stationary Sources	136	1,027	9.1
Agricultural Tilling	493	2,606	23.0
Paved Road Dust	73	447	3.9
Unpaved Road Dust	42	286	2.5
Agricultural Field Burning	6	0	0.0
ONROAD MOBILE SOURCES			
Onroad Mobile Sources	6	35	0.3
TOTAL ALL SOURCES	2,017	11,325	100.0

Figure 4-2. Projected 2015 Inventory Overview for a Typical PM_{10} Season Day (11,325 ppd)



The projected 2015 inventory differs significantly from the 2002 attainment inventory primarily because of the use of allowable emissions for point sources in the 2015 inventory. The 2015 projected inventory includes allowable emissions not only for the existing pulp and paper mill but for a natural gas-fired power plant as well. The power plant has received a permit for construction and operation from the State of Washington and thus must be assumed to be operating in the future even though its construction is currently on hold.

Allowable emissions affect both the size of the projected 2015 inventory and its apportionment among sources. The 2015 inventory is more than twice the 2002 attainment inventory on both an annual and a typical PM_{10} season day basis. Point source emissions account for over 60 percent of the projected 2015 inventory. In contrast, agricultural tilling accounted for more than half the 2002 inventory. Table 4-3 provides a comparison of the PM_{10} season day inventories for 2002 and 2015.

Table 4-3. Comparison of the 2002 Attainment and Projected 2015 PM_{10} Emission Summaries for Typical PM_{10} Season Day

Category	**Pounds per PM_{10} Season Day**		**Growth Factor**
	2002	**2015**	
POINT SOURCES			
Pulp and Paper Mill	941	4,722	5.0
Process Fugitives	insignificant	18	n/a
Mill Fugitives	86	86	0.0
Compost Facility	8	8	0.0
Subtotal	1,035	4,834	4.7
Natural Gas-Fired Power Plant	n/a	2,089	n/a
Point Sources Total	1,035	6,923	6.7
AREA SOURCES			
Small Stationary Sources	965	1,027	1.1
Agricultural Tilling	2,606	2,606	0.0
Paved Road Dust	305	447	1.5
Unpaved Road Dust	124	286	2.3
ONROAD MOBILE SOURCES			
Onroad Mobile Sources	53	35	0.7
TOTAL ALL SOURCES	5,087	11,325	2.2

Approach to the Maintenance Demonstration

Demonstrations of maintenance are normally based on dispersion or receptor modeling. In dispersion modeling, projected emissions for the maintenance year are modeled to predict PM_{10} concentrations in the nonattainment area in the maintenance year. The maximum predicted PM_{10} concentrations are reviewed to determine if they are below the level of PM_{10} standard. If predicted concentrations do not meet the standard, additional control measures are applied to emissions and the emissions are projected, modeled and verified until the modeling shows that the standard is met and thus maintenance is demonstrated.

In receptor modeling, chemical analysis of the material on a PM_{10} filter is used to allocate the PM_{10} concentration associated with the filter among emission source categories, the PM_{10} concentration for each category is projected to the maintenance year by adjusting the concentration according to the growth of the category in the emission inventory, the projected PM_{10} concentrations are summed, and the resulting total concentration is evaluated to determine if it meets the PM_{10} standard. If the total concentration exceeds the standard, additional control measures are applied and the procedure is repeated until the standard is met and thus maintenance is demonstrated.

Ecology chose to take a receptor modeling approach to the demonstration of maintenance as a result of technical analysis performed for the serious PM_{10} attainment plan for the Wallula NAA (Ecology, 2004). Ecology had found the following:

- The Wallula NAA has three typical summer-day wind patterns. Fifty percent of 22 analyzed days had high winds from the south-to-southwest and organized flow through Wallula Gap. Twenty percent had low wind speeds and disorganized flow from the north (west-northwest-to-east-northeast). Thirty percent of the time the wind regime was some combination of these two flow regimes with part of the day moderate south-to-southwest flow and the remainder low winds from northerly directions. Any other wind pattern is atypical.
- Elevated PM_{10} concentrations are found between May through September.
- Except for one exceptional set of circumstances that occurred on a low wind day in 1997, all recent (1997 and onward) exceedances of the 24-hour PM_{10} have been due to wind-blown dust.
- The material on the filter is basically dust. While it is possible, for example, to find combustion particles attributable to the Boise Paper pulp and paper mill, the particles are at best quite sparse, the overall mass is low and the R. J. Lee study concluded that they had no significance as a source. Similarly, the R.J. Lee analysis found that contributions from the other nearby and thus obvious sources, the Tyson beef cattle processing plant and the Simplot feedlot, were not significant.

Ecology developed a protocol for the maintenance demonstration (see Appendix B). EPA concurred in the approach.

Demonstration of Maintenance

Selection of Days for Air Quality Analysis

The first step in the demonstration of maintenance is the selection of days for analysis. As discussed above, Ecology prepared a 2002 attainment inventory for the Wallula maintenance plan. Since the PM_{10} standard is evaluated over a three-year period, any three-year period that overlaps 2002 can be associated with the inventory for modeling purposes—2000-2002, 2001-2003 or 2002-2004. The period 2000-2002 was selected because of the changeover of the NAA monitoring site from Wallula to Burbank. The Wallula site has data for 2000-2002 but incomplete data for 2003 due to the termination of the site in October 2003. Since 2003 is the first full year of data for the Burbank site, the data record falls outside the period of interest.

The data for 2000-2002 had ten values over half the level of the PM_{10} standard. The nine concentrations of 90 $\mu g/m^3$ and above were listed in rank order and evaluated to determine first if they were associated with a natural event due to high winds and secondly with one of the two predominant wind regimes. The results are shown in Table 4-4 and described below.

Table 4-4. Evaluation of High PM_{10} Concentration Days, Wallula, 2000-2002

RANK	DATE	PM_{10} CONCENTRATION ($\mu g/m^3$)	STATUS
1	August 10, 2000	215	Documented Natural Event
2	September 29, 2002	197	Documented Natural Event
3	May 2, 2002	134	Documented Natural Event*
4	June 29, 2000	126	Southwest Wind Regime
5	July 12, 2001	109	Southwest Wind Regime
6	June 17, 2000	100	North Wind Regime
7	August 16, 2000	99	Mixed Wind Regime
7 (tie)	June 30, 2001	99	Wallula wind data not available
8	June 5, 2000	90	Natural Event**

* Ecology prepared an addendum to a documented natural event—Walla Walla, May 2, 2002—to address the Wallula concentration on May 2, 2002 (see Appendix B).

**Ecology prepared an analysis of meteorological data associated with this natural event (see Appendix B).

The three highest concentrations (ranks 1 through 3) and the lowest concentration (rank 8) are natural events due to high winds. The two highest concentrations had been documented as natural events and flagged by Ecology and EPA.

The May 2, 2002 concentration (rank 3) is related to a documented natural event. The natural event exceedance of 169 $\mu g/m^3$ occurred at Walla Walla on the same date. An addendum to the Walla Walla documentation was prepared (see Appendix B) and the data flagged. Ecology requests that that EPA acknowledge documentation of the May 2, 2002 Wallula PM_{10} concentration by flagging it as a natural event due to high winds.

A meteorological analysis of the PM_{10} concentration for June 5, 2000 (rank 8) was prepared to justify its characterization as a natural event (see Appendix B). Full natural event documentation was not prepared. Not only is the concentration, 90 $\mu g/m^3$, comparatively low but any future assessment of the attainment status will need to be based on a more recent three-year period than one that includes the year 2000.

Two dates are tied for rank 7. Wallula wind data shows that one date, August 16, 2000, had a mixed wind regime. Under the protocol for the maintenance demonstration, mixed wind regimes are not considered. Wallula wind data was missing from the meteorological record supplied by Boise for the other date, June 30, 2001. Wind data from nearby meteorological stations for that date did not yield a clear and consistent picture of the expected wind regime at Wallula so this date was not used in the maintenance demonstration.

The three remaining dates (ranks 4 through 6) exhibited one of the two predominant wind regimes in the Wallula area. Two dates have southwest wind regimes; the third, a north wind regime. All three dates—June 29, 2000; July 12, 2001; and June 17, 2000—are used below to demonstrate maintenance of the PM_{10} standard. One goal of the maintenance demonstration protocol was identify 3-to-5 days with the predominant wind directions for air quality analysis

Demonstration of Maintenance

After the air quality analysis days were selected for the demonstration of maintenance, the demonstration was performed in three steps. First, the PM_{10} concentration on each analysis day was apportioned to its constituent sources according to source profiles developed through receptor modeling and set forth in the maintenance demonstration protocol. Secondly, a growth factor was developed for each source in the source profile to project PM_{10} concentrations to 2015. Finally, the PM_{10} concentration for each analysis day was projected to 2015 and compared to the PM_{10} standard of 150 $\mu g/m^3$ to determine maintenance.

Step 1. Apportionment of Analysis Days for to Constituent Sources

From the receptor modeling, source profiles were developed for both predominant wind directions. The profile for days with predominant southwest winds is composed of agricultural soil/unpaved road dust (which are too similar to be differentiated) and compost. The apportionment of the PM_{10} concentrations for June 29, 2000 and July 12, 2001 into these components is given in Table 4-5.

The profile for days with north winds is also composed predominantly of agricultural soil/unpaved road dust and compost. Tyson Fresh Meats, Wallula is an additional, though minor,

constituent. The apportionment of the PM_{10} concentration for June 17, 2000 into its constituent components is given in Table 4-6.

Step 2. Development of Growth Factors

The PM_{10} apportionments are projected to 2015 with the use of growth factors. A growth factor is developed for each component of the source profile by determining the ratio of 2015 emissions to 2002 emissions. A growth factor of 1.00 reflects no change in emissions. A growth factor smaller than 1.00 means that emissions decrease in the future whereas a growth factor larger than 1.00 means that emissions increase. Since agricultural soils and unpaved road dust cannot be

Table 4-5. Apportionment of Southwest Wind Regime Analysis Days

SOURCE	SOUTHWEST WIND REGIME PROFILE	JUNE 29, 2000 (µg/m^3)	JULY 12, 2001 (µg/m3)
PM_{10} Concentration		*126 µg/m^3*	*109 µg/m^3*
Agricultural Soil/Unpaved Road Dust	25.4%	32	28
Compost	74.6%	94	81
Total	100.0%	126	109

Table 4-6. Apportionment of the North Wind Regime Analysis Day

SOURCE	NORTH WIND REGIME PROFILE	JUNE 17, 2000 (µg/m^3)
PM_{10} Concentration		*100 µg/m^3*
Agricultural Soil/Unpaved Road Dust	53.2%	53
Compost	45.0%	45
Tyson Fresh Meats, Wallula	1.8%	2
Total	100.0%	100

differentiated, emissions for both source categories are summed to determine the overall growth factor for the agricultural road dust/unpaved road dust source category. Growth factors and their basis are given in Table 4-7.

Table 4-7. Source Profile Growth Factors, 2002-2015

SOURCE	EMISSIONS (ppd)		GROWTH FACTOR
	2002	2015	
Agricultural Soil/Unpaved Road Dust			
• Agricultural Tilling	2,606	2,606	
• Unpaved Road Dust	124	286	
Total	2,730	2,892	1.06
Compost	8	8	1.00
Tyson Fresh Meats, Wallula	208	180	0.87

Step 3. Demonstration of Maintenance

For each analysis day, the components of the PM_{10} apportionments were projected to 2015 with growth factors and were then summed. The results were compared with the PM_{10} standard of 150 $\mu g/m^3$. Since the projected totals did not exceed 150 $\mu g/m^3$, maintenance is demonstrated. The results are shown in Table 4-8.

Further Evaluation of Maintenance

Two additional evaluations were performed to ensure that the standard in Wallula would be maintained through 2015. One involves a facility that is permitted but not constructed, the other the major existing point source in the Wallula nonattainment area. There are no other significant sources in the Wallula NAA.

(1) Wallula Power Project

The Wallula Power Project is a natural gas-fired power generating station that has been permitted by the state of Washington in the Wallula nonattainment area. At this time it is not known when this permitted facility will be constructed.

To obtain its Notice of Construction, the Wallula Power Project had to obtain offsets and to demonstrate that there is no significant increase in ambient concentrations of PM_{10}. Therefore, operation of the power plant does not threaten continued maintenance of the PM_{10} standard in the Wallula nonattainment area.

(2) Boise Paper Solutions—Wallula Mill

An evaluation was performed as a technical addendum to the attainment plan for the Wallula serious NAA and, as necessary, to this maintenance plan to determine if operation of the Boise pulp and paper mill at its allowable PM_{10} emission levels impacts attainment of the PM_{10} standard in the Wallula nonattainment area. The pulp and paper mill is the only existing major

Table 4-8. 2015 Demonstration of Maintenance

SOURCE	2002 PM_{10} CONCENTRATION ($\mu g/m^3$)	GROWTH FACTOR	2015 PM_{10} CONCENTRATION ($\mu g/m^3$)	DEMONSTRATES MAINTENANCE?
Analysis Day: JUNE 29, 2000 — 126 $\mu g/m^3$				
Agricultural Soil/Unpaved Road Dust	32	1.06	34	
Compost	94	1.00	94	
Total	*126*		*128*	*YES*
Analysis Day: JULY 12, 2000 — 109 µg/m3				
Agricultural Soil/Unpaved Road Dust	28	1.06	30	
Compost	81	1.00	81	
Total	*109*		*111*	*YES*
Analysis Day: JUNE 17, 2000 — 100 µg/m3				
Agricultural Soil/Unpaved Road Dust	53	1.06	56	
Compost	45	1.00	45	
Tyson Fresh Meats, Wallula	2	.087	2	
Total	*100*		*103*	*YES*

stationary source in the nonattainment area. In the base-year 2002 inventory, mill emissions represented over 20 percent of typical PM_{10} season emissions in the NAA.

The evaluation showed that the Boise mill does not impact the standard. AERMOD-PRIME modeling of the mill's maximum allowable emissions over a full five-year period of meteorological data provided a result of 87.93 $\mu g/m^3$. The background concentration must be added to this modeled result to arrive at the maximum PM_{10} concentration from mill emissions. The background concentration represents the PM_{10} concentration from natural sources, other nearby sources, and transport into the area. Ecology and EPA determined the background concentration for the Wallula area is 52.0 $\mu g/m^3$. The resulting total PM_{10} concentration is 139.93 $\mu g/m^3$. The Pulp and Paper Mill Maximum Impact Analysis, which serves as a Techncial Addendum to both the serious attainment plan and this maintenance plan and is incorporated into the Maintenance Plan Appendix by reference.

Summary of the Maintenance Demonstration

Maintenance of PM_{10} standard through 2015 was demonstrated through receptor modeling. In addition, the Wallula Power Project was determined to have no significant impact on continued maintenance of the PM_{10} standard. The Project has been permitted but plans for construction are not currently known. An evaluation of maximum impact of the pulp and paper mill determined that the mill does not impact continued attainment of the standard.

4.4 Monitoring Network and Monitoring Commitment

EPA requires areas that are redesignated to attainment to maintain a monitoring network and continue ambient monitoring to ensure that the redesignated areas are continuing to maintain the standard. The State of Washington commits to maintaining a monitoring network that meets the requirements of 40 CFR Part 58.

4.5 Verification of Continued Attainment

Ecology will verify continuing attainment of the PM_{10} standard primarily through monitoring data and secondarily through emission inventory evaluation. Ecology commits to an annual review of monitoring data from the current Wallula NAA and determination of the attainment status.

After the completion of the emissions reporting for the Comprehensive Emissions Reporting Rule every three years, Ecology will evaluate Walla Walla County emissions data to determine if emissions increases are consistent with the assumptions used to project the 2015 inventory. If there are significant differences, Ecology will perform a more detailed evaluation of county and if appropriate NAA emissions. The level of detail will depend upon the significance of any differences. The evaluation will take into consideration and make allowances for differences in inventory calculation methods.

4.6 Contingency Plan

The Clean Air Act requires that a maintenance plan include contingency provisions to correct any violation of the standard that occurs after redesignation of a nonattainment area as an attainment area. The contingency measures in this maintenance plan are carried over from the serious attainment plan. At a minimum, the state must implement all enforceable measures in the attainment plan.

The contingency measures are focused on windblown dust, the major air quality issue in the Wallula area. Except for one 1997 exceedance, all exceedances since 1997 have been due to windblown dust. The contingency measures are the following:

(1) enhancements to PM_{10} monitoring that provide better source identification during exceedances,
(2) a fundamental change to PM_{10} monitoring in the Wallula NAA that improves tracking of continued attainment of the PM_{10} standard, and
(3) continuing implementation of the BACM for windblown dust described in the natural events action plan for the Columbia Plateau.

These measures are described below.

Enhancements to PM10 Monitoring

Ecology took steps to improve monitoring at the former Wallula monitoring site and made further enhancements when Wallula NAA monitoring was relocated to the current Burbank site. These enhancements were made primarily to aid identification and documentation of wind-blown dust events because of the predominant role of wind-blown dust in causing exceedances and elevated PM_{10} concentrations in the Wallula NAA. The enhancements are also useful in dealing with exceedances due to other causes.

Sometimes documentation of natural events is straightforward. Moderate-to-strong winds from the south-to-southwest cause exceedances or, at least, elevated PM_{10} concentrations across the eastern region of Washington State. The winds are measured at meteorological stations across the region, generally in Kennewick, Wallula and Spokane, and reflected in weather maps showing the passage of a weather system through the region.

Other natural events require much more analysis to confirm a link between observed meteorology and PM_{10} concentration. Winds alternate between periods of moderate winds from the south-to-southwest and periods of calm or low winds predominantly from the northeast and northwest. These shifting winds make it difficult to relate the exceedance to the meteorology.

Ecology addressed this issue in the Wallula NAA by co-locating a PM_{10} Tapered Element Oscillating Microbalance (TEOM) with the filter-based FRM PM_{10} monitor. The PM_{10} TEOM provides continuous information on PM_{10} concentrations. Ecology's TEOMs are set up to report

hourly PM_{10} concentrations. With the TEOM, hourly PM_{10} concentrations can be matched against wind records to identify the wind episodes transporting dust.

The TEOM also provides the opportunity for identifying exceedances in "real-time." With the filter-based FRM PM_{10} monitor, the filter must be removed and shipped to the laboratory to be weighed to determine the PM_{10} concentration. In contrast, the TEOM located at the Burbank monitoring site is connected to Ecology's telemetry system. The telemetry system automatically accesses Burbank TEOM data on an hourly basis through the internet and downloads the data to Ecology's telemetry system data base. Hourly concentrations are made available to Ecology and local air authority staff through an internal air quality site operator's website. The data are also available to the public in close to "real-time" through the Ecology Air Quality Program's air monitoring website:

https://fortress.wa.gov/ecy/aqp/Public/databyarea.shtml

The public website is designed to focus on the health implications of PM_{10} concentrations through use of Air Quality Index (AQI) categories in presentation of the real-time data.

A number of Ecology staff involved in air quality planning, monitoring, quality assurance and technical support as well as staff from local air authorities check Ecology's internal and external websites periodically during the day and use e-mail to disseminate information on potential exceedances. Since the Burbank monitoring site also has co-located meteorological equipment connected to the telemetry system, hourly data on wind speed, wind direction, and temperature are also reviewed to help determine the potential for an exceedance.

Real-time TEOM and meteorological data allow staff to get an early start gathering materials for documentation. Some meteorological data that have proved useful for documentation are publicly available through the internet only for a limited time before being archived. Since obtaining the archived data can be slow and, at times, costly, Ecology staff download relevant information as soon as the possibility of an exceedance is recognized. Should quality-assured data confirm the exceedance, the data are then already available for preparing natural event documentation.

In summary, continuous PM_{10} monitoring combined with availability of the data through the internet provides benefits both for informing the public of unhealthful air quality and for allowing Ecology to get an early start on documentation. These benefits include the following:

- Health implications of current PM_{10} concentrations are available to the public through Ecology's website.
- Real-time TEOM data and meteorological data allow Ecology (and local air agencies) to determine if actions are or may be needed to address elevated PM_{10} concentrations.
- Real-time data provide staff with a means to recognize that pertinent internet data should be downloaded for potential use in natural event documentation.
- Hourly PM_{10} concentrations are useful for identifying source categories contributing to an exceedance under variable wind conditions.

Fundamental Change to PM_{10} Monitoring

Ecology has made a fundamental change to the way PM_{10} concentrations are monitored and reported. Beginning July1, 2004, data from the Burbank TEOM (and other TEOM data) are being quality-assured and submitted to EPA's AQS database. Since EPA has designated the PM_{10} TEOM as an equivalent method, quality-assured TEOM data is used to independently assess compliance with the PM_{10} standard. Before July 1, 2004, only the filter-based FRM monitor located at Burbank could be used to determine compliance with the PM_{10} standard, because the TEOM data were not quality-assured.

A major advantage of quality-assured TEOM data is a more complete picture of PM_{10} concentrations in the Wallula NAA. Because of the rural nature of the nonattainment area and the difficulty of obtaining operators, the FRM PM_{10} monitor has been operated on a schedule (currently one day in three) rather than daily. Now quality-assured TEOM data can provide valid daily PM_{10} monitoring data. While the FRM PM_{10} monitor does not operate daily, it remains valuable at this time because the filter can be analyzed to determine sources impacting the filter.

Continuing Implementation of BACM for Wind-Blown Dust

The predominant cause of exceedances in the Wallula NAA has been wind-blown dust from agricultural fields. While Wallula has thus far experienced only a single wind-dust exceedance (197 $\mu g/m^3$ on September 29, 2002) since the NAA was reclassified to serious in 2001, the Columbia Plateau of eastern Washington has 13 days of exceedances between 2001 and 2004. The standard was exceeded at one-to-five monitoring sites on these days. The lowest exceedance, 164 $\mu g/m^3$, occurred on November 10, 2003 at Kennewick; the highest, 1,432 $\mu g/m^3$, occurred on October 28, 2003 also at Kennewick.

EPA issued the Natural Events Policy (NEP) on May 30, 1996. Under the NEP, ambient PM_{10} concentrations raised by unusually high winds may be treated as uncontrollable natural events when the dust originates from nonanthropogenic sources, or when the dust originates from contributing anthropogenic sources controlled with BACM. After natural events cause the PM_{10} concentration to violate the PM_{10} standard, the NEP requires the state to develop a natural events action plan (NEAP) to deal with future exceedances.

Ecology developed its initial NEAP for high wind events in the Columbia Plateau in March 1998. Ecology evaluated the initial NEAP and submitted a revised NEAP to EPA in July 2003 (Ecology, 2003).

Definition of BACM

The revised NEAP defines agricultural BACM as USDA Conservation Title Programs supplemented by implementation of incentive-based wind erosion conservation practices (best management practices or BMPs). The most significant Conservation Title Program has been the Conservation Reserve Program (CRP) under which vulnerable lands are removed from agricultural production and a permanent vegetative cover is established for a contractual period. The wind erosion BMPs are those encouraged by the Natural Resources Conservation Service

(NRCS) and the Columbia Plateau Wind Erosion /Air Quality Project (referred to as the CP3), which was initiated by Ecology, EPA, the U. S. Department of Agriculture and Washington State University.

The BACM definition recognizes the critical role of agricultural agencies in defining and instituting BACM. The primary agencies include those directly reporting to the USDA such as the already referenced NRCS, the Farm Service Agency (FSA), and the Agricultural Research Service (ARS). Additional agricultural agencies include the Washington State Conservation Commission, local Conservation Districts, and various departments of Washington State University. The NEAP acknowledges the expertise of these agencies and relies on their programs in implementing the conservation practices that constitute BACM.

Enhancing Wind Erosion Conservation Measures in Priority Counties of the Columbia Plateau

EPA awarded Ecology special grant funds to explore and encourage implementation of BMPs in the Columbia Plateau. Ecology used most of the funds to contract with the Benton Conservation District (BCD) for BMP implementation. The contract (1) provided immediate, temporary treatment to critical areas and (2) promoted conservation buffers as options for longer-term or permanent wind erosion control measures.

The full results of the grant to Ecology include the following:

(1) Under the contract, fourteen different farm operations applied over 771 tons of grass straw to about 520 acres of "hot spots" (highly erodible areas) using a grant-purchased straw-mulcher. Growers applied an additional 300 tons without contract-supported cost-share straw. In total, growers applied over 1000 tons of straw in an effort to protect against the occurrence of windblown dust.

(2) The BCD, the NRCS, Ecology, and the Benton Clean Air Authority (BCAA) conducted an education and outreach program that focused on wind erosion conservation buffers as a longer-term solution to wind erosion. Over thirty state natural resource agency staff and dryland wheat growers from the Horse Heaven Hills attended a meeting that was an adjunct to a three-day technical workshop (May 17-20, 2004) focused on implementing wind erosion conservation measures in the Columbia Plateau. Numerous growers responded favorably to implementing conservation buffers on a trail basis. Ecology, the BCD and EPA will develop a grant to facilitate such an effort in the spring of 2005.

(3) In November 2002, the BCAA, the BCD and others wrote letters to the Washington State office of the FSA regarding CRP eligibility in the Horse Heaven Hills. The BCAA expressed the view that the Horse Heaven Hills dryland wheat region should receive greater consideration as an air quality conservation priority area for the purpose of CRP eligibility. In support of this view, the BCAA points to air quality concerns affecting the Tri-Cities and the Wallula, Washington areas due to windblown dust. The BCAA identifies the Horse Heaven Hills as a source area. Ecology wrote to the FSA supporting BCAA's position. The most recent enrollment in CRP has increased from about 74,000 acres to over 120,000 acres, of which 108,000 acres are in the Horse Heaven Hills.

(4) Staff from the BCD, the NRCS, Ecology and several dryland growers from the Horse Heaven Hills participated in NRCS's local work group process regarding criteria and eligibility for EQIP funding. This involvement directly led to changes in criteria and eligibility that will facilitate increased implementation of wind erosion conservation measures in the Horse Heaven Hills. Most importantly, air quality is elevated as a natural resource concern—second only to water quality.

Columbia Plateau PM_{10} Direct Seeding Demonstration Project

This grant funded, in part, considerable research conducted by the ARS and WSU to identify BMPs to reduce wind erosion and blowing dust. One of the management systems incorporating the identified BMPs is "no-till/minimum till". No-till management systems are flexible since they are made up of several interchangeable options that are then adapted to each grower's land. Direct seeding is a crucial component of the no-till management system.

Many producers are interested in converting to direct seeding. Unfortunately, there is considerable apprehension about how direct seeding can be economically viable in low precipitation zones. The Columbia Plateau PM10 Direct Seeding Demonstration project, which is expected to extend to 2007, focuses on sites to:

- Demonstrate that direct seeding is both economically and technically feasible in the 12 inch or less precipitation zone
- Provide an opportunity for selected growers to make the conversion to direct seeding
- Provide an opportunity to gather additional research data relating to the conversion to direct seeding

The Conservation Security Program and the Moses Coulee Watershed

The Farm Security and Rural Investment Act of 2002 (2002 Farm Bill) authorized the Conservation Security Program (CSP). The CSP supports on-going stewardship of private agriculture lands by providing payments for maintaining and enhancing natural resources.

Nationally, eighteen watersheds were selected to participate in the CSP in 2004. One of these is the Moses Coulee Watershed. Located in Central Washington, the Moses Coulee includes portions of both Douglas and Grant counties. Eligible growers that apply and are selected will receive funding support to maintain and enhance conservation management practices on their operations. NRCS reports that air quality management practices are among the most important practices targeted for enhancement in the Moses Coulee through the CSP.

Water Quality Grants

Ecology's Water Quality Program is funding two projects that enhance wind erosion control measures on the Columbia Plateau. These are the Spokane Conservation District Conservation Tillage Program and the Franklin Conservation District Wheat Erosion Buffer Program continue.

Additional details regarding these two programs are found in the 2003 Best Available Control Measures Status Report and at http://www.sccd.org/sccd/productionag/.

The objectives of both water and wind erosion control are to prevent or minimize soil particle detachment and entrainment by the medium, whether air or water. Consequently, conservation practices to reduce the effects from both types of erosion are similar. For this reason, when conservation measures to reduce water erosion are increased air quality improves.

BACM Tracking

As mentioned previously, the NEAP defines BACM as the CRP program and the wind erosion BMPs encouraged by the NRCS and the CP3. Ecology tracks the use of these practices in Washington State with the Conservation Technology Information Center's Core 4 program. The Core 4 program tracks conservation tillage practices (No-Till, Ridge-Till, Mulch-Till), conventional tillage practices (0-15% and 15-30% residue), and CRP enrollment on a county by county basis.

Ecology recently conducted a BACM evaluation for the year 2004. The data shows 79 percent use of conservation practices throughout the Columbia Plateau. The results are consistent with the 2003 NEAP determination that BACM is being implemented on the Columbia Plateau of eastern Washington.

4.7 Exclusion from Transportation Conformity

The 1990 Clean Air Act Amendments (CAA) require that transportation plans conform to the State Implementation Plan (SIP). This integration of transportation and air quality planning is intended to ensure that transportation plans, programs, and projects will not "(i) cause or contribute to a new violation of any standard in any area; (ii) increase the frequency or severity of any existing violation of any standard in any area; or (iii) delay timely attainment of any standards or any required interim emissions reductions or other milestones in any area." EPA's Transportation Conformity Rules establish criteria and procedures by which the Federal Highways Administration (FHWA), the Federal Transit Administration (FTA), the State Department of Transportation, and the designated Metropolitan Planning Organization (MPO) determine the conformity of federally funded or approved highway and transit plans, programs, and projects to the SIP.

This chapter summarizes the State of Washington's demonstration that motor vehicles are an insignificant source of emissions in the Wallula nonattainment area. The upshot of this demonstration is exclusion of the Wallula NAA from the transportation conformity requirement for regional emissions analysis for PM_{10}. As a result, this maintenance plan does not establish a PM_{10} motor vehicle emissions budget (MVEB) for transportation conformity. Other significant transportation conformity requirements (e.g., PM_{10} analysis of transportation projects for air quality impacts and consultation) continue to apply.

Demonstration that Regional Motor Vehicle Emissions are Insignificant

Section 93.109(k) of EPA's July 1, 2004 Transportation Conformity Rule Amendments (69 FR 40004) addresses areas for which a SIP demonstrates that regional motor vehicle emissions are an insignificant contributor to nonattainment. When a SIP demonstrates "it would be unreasonable to expect that such an area would experience enough motor vehicle emissions growth…for a NAAQS violation to occur," no Motor Vehicle Emissions Budget (MVEB) is established by the SIP for that criteria pollutant and no regional analysis for is required for transportation conformity. A demonstration of insignificance is based upon a number of factors, including the following:

- the percentage of inventory comprised of motor vehicle emissions in context of the total inventory;
- the current state of air quality as determined by monitoring data for the NAAQS;
- the absence of motor vehicle control measures; and
- historical trends and future projections of the growth of motor vehicle emissions.

Ecology has demonstrated that motor vehicles are an insignificant source of emissions that might contribute to a violation of the federal ambient air quality standard for PM_{10} in the Wallula NAA. This demonstration is based on individual and collective evaluation of the four factors specified by EPA for a finding of insignificance. The basis for the demonstration is summarized below. The detailed demonstration of insignificance is found in Appendix B.

Factor 1. The percentage of inventory comprised of motor vehicle emissions in context of the total inventory

Motor vehicle emissions account for 9.4 percent of the 2002 summer-day inventory for the Wallula nonattainment area. Statistical analysis has identified summer (June through September) as the season of elevated PM_{10} concentrations at the Wallula monitoring site. Motor vehicle emissions comprise dust from paved and unpaved roads, tailpipe emissions, and brake and tire wear. Emissions from motor vehicles are expected to remain less than 10 percent of total emissions in the future because of the unusual nature of emissions in the Wallula area. Agricultural tilling accounts for over 50 percent of the inventory. Together, large and small industrial sources comprise almost 40 percent of the inventory. EPA has waived the requirement to establish an MVEB whenever the percentage of emissions from motor vehicles is less than 10 percent.

Factor 2. The current state of air quality as determined by monitoring data for the NAAQS

The Wallula nonattainment area currently meets the PM10 standard as detailed in Chapter 2.

Factor 3. The absence of motor vehicle control measures

The Wallula NAA does not have existing motor-vehicle controls. Motor vehicle controls would have little-to-no impact on the maintenance of the PM_{10} standard in the Wallula NAA. Typical transportation control measures such as improved public transit, construction of high-occupancy

vehicle (HOV) lanes, or traffic flow improvement programs provide little-to-no benefit for reducing PM_{10} emissions from motor vehicles in this rural area. Additionally, the unpaved roads in the nonattainment area have average daily traffic (ADT) of less than 50 vehicles per day, so that paving these roads provides no real benefit for reducing PM_{10} concentrations.

Factor 4. Historical trends and future projections of the growth of motor vehicle emissions

While historical data for vehicle miles traveled (VMT) in the Wallula PM_{10} nonattainment area are not available, it is possible to assess both historical and forecast local VMT by using regional VMT, regional population data, and local ADT counts.

Forecast VMT in the Wallula nonattainment area should not exceed the range of 2.5-to-3.0 percent annually. This conclusion is based upon state county-level population forecasts, the local regional transportation planning agency's forecast for regional VMT growth, historical traffic counts on U. S. Route 12, the major highway that runs though the NAA, and consideration of the impact of the expansion of U. S. Route 12. The Washington State Department of Transportation (WSDOT) is currently expanding U.S. Route 12 between the Tri-Cities and Walla Walla into a 4-lane facility with access limited to channelized intersections to allow increased capacity for moving freight, lessening congestion, and improving safety. VMT growth and highway construction are often a concern for future air quality. However, because of the rural nature of the Wallula area, the future significance of PM_{10} motor vehicle emissions should not be affected by land-use and urban-growth related concerns.

An evaluation indicates that Wallula will continue to meet the standard despite growth in motor-vehicle emissions (see Appendix B). Growth in motor-vehicle emissions increases the PM_{10} design value by about 3 percent over a ten-year period. This indicates that the forecast growth in annual VMT of 2.5-to-3.0 percent does not affect attainment of the PM_{10} standard in Wallula.

Another way of viewing the results of the evaluation is that even a 10 percent reduction in the growth of motor vehicle emissions would provide only a 0.3 percent reduction in the PM_{10} design value. Accordingly, motor vehicles are expected to have an insignificant impact on PM_{10} concentrations.

Exclusion from Regional Emissions Analysis for Transportation Conformity

Ecology has demonstrated that motor vehicles are an insignificant source of emissions that might contribute to a violation of the federal ambient air quality standard for PM_{10} in the Wallula NAA. Hence, this maintenance plan contains no MVEB for regional emission analysis and regional analysis of emissions for transportation conformity is not required.

EPA's transportation conformity regulations and guidance documents require that project sponsors conduct project-level analysis to demonstrate that transportation projects do not cause a violation of the ambient PM_{10} standard. The transportation conformity requirement for consultation also applies.

4.8 Commitment for Subsequent Plan Revision

The Clean Air Act requires submission of a plan maintaining the standard for a second 10-year period eight years after redesignation. The State of Washington commits to submission of a plan for the second 10-year period.

4.9 References

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