South Coast Air Quality Management District

DRAFT - 2012 LEAD STATE IMPLEMENTATION PLAN LOS ANGELES COUNTY

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Deputy Executive Officer
Planning, Rule Development and Area Sources
Elaine Chang, DrPH

Assistant Deputy Executive Officer
Planning, Rule Development and Area Sources
Laki Tisopulos, Ph.D., P.E.

Manager
Planning and Rules
Philip Fine, Ph.D.

Authors:	Victoria Moaveni	Senior Air Quality Engineer
	Jillian Baker, Ph.D.	Air Quality Specialist
	Andrea Polidori, Ph.D.	Air Quality Specialist
Reviewed by:	Barbara Baird	District Counsel
	William Wong	Principal Deputy District Counsel
	Tom Chico	Program Supervisor
Contributors:	Ed Eckerle	Program Supervisor
	Ali Ghasemi	Program Supervisor
	Kathy Hsiao	Program Supervisor
	Eugene Kang	Air Quality Specialist
	James Koizumi	Air Quality Specialist
	Steve Smith, Ph.D.	Program Supervisor
	Susan Yan	Air Quality Specialist
	Xinqiu Zhang, Ph.D.	Air Quality Specialist

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LIST OF ACRONYMS AND ABBREVIATIONS

AER	Annual Emissions Reporting
AERMIC	American Meteorological Society/Environmental Protection Agency Regulatory Model Improvement Committee
AQMD	South Coast Air Quality Management District
AQS	Air Quality Systems
ATCM	Airborne Toxic Control Measure
Avgas	Aviation Gasoline
Basin	South Coast Air Basin
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standard
CARB	California Air Resources Board
CASAC	Clean Air Scientific Advisory Committee
CEQA	California Environmental Quality Act
CTG	Control Technique Guidelines
DTSC	California Department of Toxic Substances Control
EPA	U.S. Environmental Protection Agency
FEM	Federal Equivalent Method
FRM	Federal Reference Method
H&SC	Health & Safety Code
HRA	Health Risk Assessment
ISC	Industrial Source Complex
LAER	Lowest Achievable Emissions Rate
MDAB	Mojave Desert Air Basin
MICR	Maximum Individual Cancer Risk
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NLCD	National Land Cover Data
NSR	New Source Review
RACM	Reasonably Available Control Measure
RACT	Reasonably Available Control Technology
RFP	Reasonable Further Progress
SIP	State Implementation Plan
SSAB	Salton Sea Air Basin
TAC	Toxic Air Contaminant
T-BACT	Best Available Control Technology for Toxics
TPY	Tons Per Year
TSP	Total Suspended Particulate
USGS	U.S. Geologic Survey

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EXECUTIVE SUMMARY

Introduction
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Guide to the 2012 Lead SIP
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INTRODUCTION

This executive summary includes:

- Background information regarding recent changes to the National Ambient Air Quality Standards (NAAQS) for lead, the nonattainment area for lead in the South Coast Air Basin (Basin), and other relevant regulatory background;
- A quick guide to the 2012 lead State Implementation Plan (SIP) for Los Angeles County- (2012 Lead SIP);
- Questions and answers concerning this 2012 lead SIP

LEAD AIR QUALITY AND REGULATORY BACKGROUND

The federal Clean Air Act (CAA) requires U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards for lead and five other criteria pollutants considered harmful to public health and the environment (the other pollutants are ozone, particulate matter (including PM_{10} and $PM_{2.5}$, nitrogen dioxide, carbon monoxide, and sulfur dioxide). The law also requires EPA to periodically review the standards and the latest scientific information to ensure that they provide adequate health and environmental protection, and to update those standards as necessary.

Lead is a criteria pollutant and is also identified as a carcinogenic Toxic Air Contaminant (TAC) by the California Office of Environmental Health Hazard Assessment (OEHHA). The EPA promulgated the initial lead standard of 1.5 micrograms per cubic meter ($\mu g/m^3$) in 1978. On October 15, 2008 (73 FR 66964; November 12, 2008), EPA tightened the standard by reducing it to 0.15 $\mu g/m^3$, and changing the form of the standard to a rolling 3-month average rather than the previous quarterly average. Once EPA establishes or revises a NAAQS, pursuant to section 107(d) of the CAA, EPA must designate as "nonattainment" those areas that violate the NAAQS and those nearby areas that contribute to violations.

On December 31, 2010, the EPA designated a portion of Los Angeles County , excluding the high desert areas, San Clemente and Santa Catalina Islands (Southern Los Angeles County), as nonattainment for the 2008 lead NAAQS based on monitored air quality data from 2007-2009 that indicated a violation of the NAAQS for two large lead-acid battery recycling facilities. The CAA requires areas classified as nonattainment to attain the lead standard as expeditiously as practicable and within CAA deadlines, which in the case of Los Angeles County is no later than December 31, 2015. The South Coast Air Quality Management District (AQMD) is the regional air agency responsible for air quality planning and regulations in the Los Angeles County. Any state containing an area designated as nonattainment must develop and submit a SIP within 18 months of the effective date of the nonattainment designation, meeting the requirements of part D, Title 1, of the CAA. Accordingly, the SIP for lead must be submitted to EPA by July 1, 2012.

The purpose of this SIP is to outline the strategies, planning and pollution control activities needed to demonstrate attainment of the lead NAAQS as expeditiously as practicable, but no later than December 31, 2015. The AQMD's SIP submittal process includes a public

workshop, 30 days public notice, and a public hearing before the AQMD Governing Board prior to submittal to CARB, who then submits it to EPA.

GUIDE TO THE 2012 LEAD SIP

The 2012 Lead SIP addresses the recent revision to the lead NAAQS, and outlines the strategies, planning and pollution control activities that demonstrate attainment of the lead NAAQS before December 31, 2015. This document is organized into six chapters, each addressing a specific topic. The following summarizes the purpose and contents of each chapter:

Chapter 1, "Introduction," describes the purpose of the 2012 lead SIP and some brief background information on the lead nonattainment area, the history of lead NAAQS, the history and impact of lead control efforts, and the CAA planning requirements for nonattainment areas.

Chapter 2, "Lead Air Quality in Los Angeles County," discusses the lead air quality as measured by monitors in Los Angeles County as well as historical trends in ambient lead concentrations.

Chapter 3, "Lead Inventory," estimates current emissions of lead by different sources and source categories, and provides projections of future year emissions.

Chapter 4, "Lead Control Strategy," presents the overall attainment strategies in achieving the emission reductions necessary for the attainment of the revised NAAQS for lead by 2015.

Chapter 5, "Future Ambient Lead Concentrations," describes the modeling approach and modeling results used to demonstrate attainment of the lead NAAQS under the control strategy described in Chapter 4.

Chapter 6, "Clean Air Act Requirements," discusses specific federal requirements and how they are satisfied by this 2012 Lead SIP.

QUESTIONS AND ANSWERS REGARDING THE 2012 LEAD SIP

Why is this 2012 Lead SIP being prepared?

On December 31, 2010, EPA designated the Los Angeles County portion of the Basin as nonattainment for the 2008 Lead NAAQS. The federal CAA requires lead nonattainment areas to prepare a SIP outlining the strategies, planning and pollution control activities that demonstrate attainment of the lead NAAQS.

Is lead air quality improving?

Yes. Over the past forty years, the lead air quality in the Basin has dramatically improved due to comprehensive control strategies implemented to reduce pollution from mobile and stationary sources. There have been no violations of the federal and state ambient air quality standards at the AQMD's regional air monitoring stations since 1982. The reduction before 1990 is largely due to the phase-out of lead from gasoline for on-road vehicles. Substantial emission reductions have also been achieved due to enhanced controls in the metals processing industry.

AQMD has been collecting lead monitoring data in the Los Angeles County portion of the South Coast Air Basin since 1975 throughout its regional monitoring network. Trends in monthly average lead concentrations for all available network sites show that lead levels have been reduced by two orders of magnitude since 1975 (from values as high as 7.49 $\mu g/m^3$ in 1976 to an urban background level of about 0.01 $\mu g/m^3$). Although past controls have resulted in substantial lead emission reductions, the revised 2008 NAAQS for lead of 0.15 $\mu g/m^3$ resulted in the Los Angeles County's non-attainment designation for the 2008 federal lead NAAQS. This designation was not due to AQMD's regional network lead monitors, but instead was based on AQMD's source-oriented monitors near specific facilities. These monitors have shown that emissions from two large lead-acid battery recycling facilities, Exide Technologies (located in the City of Vernon) and Quemetco Inc. (City of Industry), have exceeded and have the potential to exceed the new federal lead NAAQS. As a result, the AQMD Governing Board adopted Rule 1420.1 in November 2010 which applies to these large lead-acid battery recycling facilities. The purpose of the rule is to protect public health by reducing exposure to lead, and to provide the additional emissions reductions necessary to ensure the Basin can achieve and maintain the revised lead standards.

What are the major sources contributing to lead nonattainment areas and what is the overall control strategy to meet the revised lead air quality standards?

Based on monitoring data, the AQMD staff has identified large lead-acid battery recycling facilities as the only source of lead in the Basin that have caused or have the potential to cause exceedances of the new lead NAAQS. Therefore, the overall control strategy relies upon emission reductions from large lead-acid battery recycling facilities which have already been addressed through the 2010 adoption AQMD Rule 1420.1 – Emissions Standard for Lead From Large Lead-Acid Battery Recycling Facilities.

What are the main challenges for attainment of lead standards?

The main challenge for future attainment of the lead standard is the large uncertainties in quantifying fugitive dust emissions. Given the difficulty in quantifying fugitive lead emissions, and given the known importance of fugitive emissions at lead-acid battery recycling facilities, the ambient monitors required by AQMD Rule 1420.1 provide the most effective means of ensuring compliance with the NAAQS since they capture all lead emissions. As a result, this attainment demonstration relies heavily on ambient monitoring to capture the direct impact of fugitive and all other emissions on ambient concentrations, in a manner similar to, but more stringent, than federal requirements for NAAQS monitoring.

CHAPTER 1
INTRODUCTION

Purpose
Setting / Population
The Lead Nonattainment Area
History of Lead NAAQS
Emission Sources
Lead Health Effects
History of Control Efforts
Impact of Control Efforts
CAA Planning Requirements Addressed by this SIP
State Law Requirements

PURPOSE

The Clean Air Act (CAA) requires the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for lead and five other criteria pollutants as well as any criteria pollutants that EPA may identify in the future. The law also requires EPA to periodically review the existing standards and the latest scientific information to ensure that they provide adequate health and environmental protection, and to update those standards as necessary.
The EPA established the initial lead standard of 1.5 micrograms per cubic meter ($\mu g/m^3$) in 1978. Since then, scientific evidence about lead health effects, environmental effects, and lead in the air has expanded dramatically, and shows that adverse effects occur at much lower levels of lead in the blood than previously thought. As a result, the EPA revised the lead NAAQS on October 15, 2008 (73 FR 66964; November 12, 2008) significantly strengthening the standard from 1.5 $\mu g/m^3$ to 0.15 $\mu g/m^3$. In conjunction with strengthening the lead NAAQS, EPA also established new criteria for the siting of ambient lead monitors. EPA found that the pre-existing ambient lead monitoring networks were inadequate for determining whether many areas are meeting the revised lead NAAQS. Additional monitors meeting the new network siting requirements were to begin operation January 1, 2010.

On December 31, 2010, the EPA designated the Los Angeles County portion of the South Coast Air Basin, excluding San Clemente and Santa Catalina Islands (Southern Los Angeles County), as nonattainment for the 2008 Lead NAAQS based on monitored air quality data from 2007-2009, indicating a violation of the NAAQS, pursuant to section 107 (d)(1) of the CAA.

The AQMD is the air agency responsible for air quality planning and regulations of stationary sources in the Orange County, Los Angeles County, and portions of San Bernardino and Riverside Counties. The Purpose of this State Implementation Plan (SIP) is to outline the strategies, planning and pollution control activities that demonstrate attainment of the lead NAAQS as expeditiously as practicable, but no later than December 31, 2015. The SIP will be submitted to EPA upon approval by AQMD's Governing Board and the California Air Resources Board (CARB).

SETTING /POPULATION

The AQMD jurisdiction covers an area of approximately 10,743 square miles, consisting of the four-county South Coast Air Basin (Basin), and the Riverside County portions of the Salton Sea Air Basin (SSAB) and Mojave Desert Air Basin (MDAB). The Basin, which is a sub-region of the AQMD's jurisdiction, is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. It includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. The Riverside county portion of the SSAB is bounded by the San Jacinto Mountains in the west and spans eastward up to the Palo Verde Valley. The federally designated nonattainment area for lead consists only of the Los Angeles County

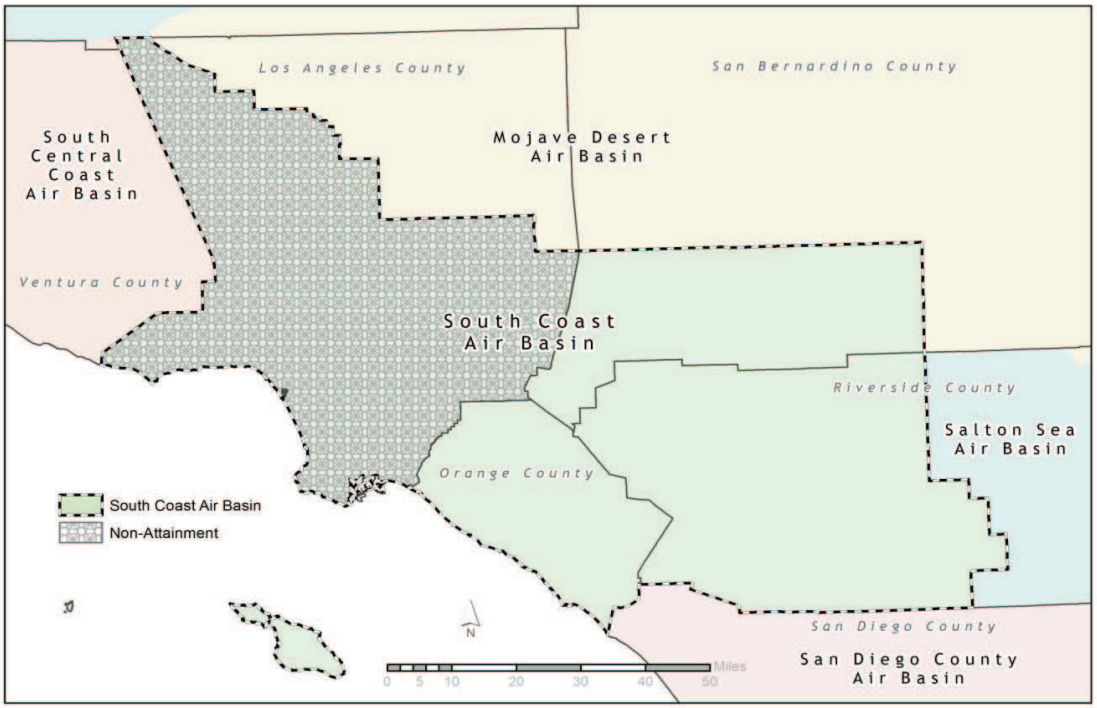
portion of the Basin, excluding San Clemente and Santa Catalina Islands (Southern Los Angeles County).

The AQMD portion of Los Angeles County, where the major lead emissions sources are located, is surrounded by mountains which act as barriers to airflow between the Basin and Mojave Desert. Although there are a limited number of gaps in these mountains where transport has been documented, transport of lead emissions from the South Coast into the Mojave Desert is highly unlikely, given the size and weight of lead particles and the rapid decrease in concentration with distance from a source. As a result, emission sources in the Los Angeles County are not expected to have an impact on lead concentrations in the Mojave Desert portion of the County.

The South Coast Air Basin region is shown in Figure 1-1 with the lead nonattainment areas highlighted.

FIGURE 1-1

Boundaries of the South Coast Air Basin and Lead Nonattainment Areas



Population

Since the end of World War II, the Basin has experienced faster population growth than the rest of the nation. Although growth has slowed somewhat, the region's population is expected to increase significantly through 2020. Table 1-1 shows the projected growth based on Southern California Association of Government's (SCAG) regional growth forecast.

Population exposure to air pollutants has declined significantly over the years, primarily due to the impacts of federal, state, and regional air quality control programs. Although population exposure to pollution has been substantially reduced in the Basin through several decades of implementing pollution controls, increases in the population over that time have made overall emission reductions more difficult. Many sources, such as major stationary sources and automobiles, have significantly reduced emissions through technology advances.

TABLE 1-1

Population Growth

Year	1990	2000	2010	2013	2015
Population	13.0 million	14.8 million	16.9 million	17.3 million	17.6 million

THE LEAD NONATTAINMENT AREA

In May 2010, CARB recommended to EPA that the Los Angeles County portion of the South Coast Air Basin, excluding San Clemente and Santa Catalina Islands (Southern Los Angeles County), be designated as nonattainment for the 2008 lead NAAQS based on air quality data from 2007-2009. CARB's recommendation was based on data from Federal Reference Method (FRM) or Federal Equivalent Method (FEM) monitors located in the state. The 2008 lead NAAQS requires full attainment no later than December 31, 2015. Demonstration of attainment is based on measurements using a rolling 3-month averaging form of the standard to be evaluated over a 3-year period. Ambient measurement data are to be produced by EPA-required monitoring networks within each state which consist of both source-oriented and population monitors.

HISTORY OF LEAD NAAQS

The CAA requires EPA to set national air quality standards for lead and five other pollutants considered harmful to public health and the environment (the other pollutants are ozone, particulate matter (including PM_{10} and $PM_{2.5}$, nitrogen dioxide, carbon monoxide, and sulfur dioxide). The law also requires EPA to periodically review the existing standards to ensure that they provide adequate health and environmental protection, and to update those standards as necessary.

The CAA established two types of NAAQS for lead and other criteria pollutants. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against visibility impairment, damage to animals, crops, vegetation, and buildings. To provide increased protection against lead-related welfare effects, EPA revised the secondary standard to be identical in all respects to the revised primary standards. Once EPA establishes or revises a primary and/or secondary NAAQS, pursuant to section 107(d) of the CAA, EPA must designate as "nonattainment" those areas that violate the NAAQS and those nearby areas that contribute to violations. In addition, CARB is authorized to establish state ambient air quality standards which may be more stringent than the federal standards.

The following provides a brief summary of the lead NAAQS history:

- In 1970, CARB set the state ambient air quality standard for lead at 1.5 $\mu g/m^3$ based on a 30-day average.
- On October 1978, EPA promulgated primary and secondary NAAQS for lead under section 109 of the Act (43 FR 46246). Both primary and secondary standards were set at a level of 1.5 $\mu g/m^3$ based on a quarterly average (maximum arithmetic mean averaged over a calendar quarter).
- On October 2008, EPA amended the NAAQS for lead from 1.5 $\mu g/m^3$ to 0.15 $\mu g/m^3$ requiring attainment by December 31, 2015 using a rolling 3-month averaged evaluated over 3 year period.
- On May 2010, CARB recommended to the EPA that the South Coast portion of Los Angeles County be designated as nonattainment for the 2008 federal lead standard.
- On December 31, 2010, EPA designated the Los Angeles County portion of the South Coast Air Basin, excluding San Clemente and Santa Catalina Islands (Southern Los Angeles County), as nonattainment for the 2008 lead NAAQS requiring attainment no later than December 31, 2015.

EMISSION SOURCES

Lead is a metal found naturally in the environment and present in some manufactured products. There are a variety of activities that can contribute to lead emissions, which are grouped into two general categories, stationary and mobile sources. Stationary sources can be further grouped into "point" and "area" sources. Point sources have one or more identified and fixed pieces of equipment and emission points at a permitted facility. Area sources consist of widespread and numerous smaller emission sources, such as smaller facilities, households, or other land uses. Mobile sources can also be grouped into two major categories, "on-road" and "other" mobile sources. On-road mobile sources include light-duty automobiles; light-, medium-, and heavy-duty trucks; and motorcycles. Examples of "other" mobile sources include aircraft, locomotives, construction equipment, mobile equipment, and off-road recreational vehicles.
Emissions of lead have dropped substantially over the past forty years. The reduction before 1990 is largely due to the phase-out of lead as an anti-knock agent in gasoline for on-road automobiles. Substantial emission reductions have also been achieved due to enhanced controls in the metals processing industry. However, with the recent strengthening of the NAAQS for lead, additional reductions may be needed to attain the federal lead air quality standards.

Historically, the major source of lead air emissions has been gasoline-powered motor vehicles. Motor vehicle emissions of lead have been dramatically reduced due to the phase-out of leaded gasoline, but lead is still used as an additive in general aviation gasoline (avgas) and remains as a trace contaminant in other fuels. Avgas is only utilized in general aviation aircraft with piston engines, which are generally used for instructional flying, air taxi

activities, and personal transportation. Emissions of lead from piston-engine aircraft using leaded avgas comprise approximately half of the national inventory of lead emitted to the air.

Sources of lead from stationary sources are mainly from larger industrial sources including but not limited to, metals processing, particularly primary and secondary lead smelters. Lead can also be emitted from sources, such as iron and steel foundries; primary and secondary copper smelters; industrial, commercial, and institutional boilers; waste incinerators; glass manufacturing; refineries, and cement manufacturing. The lead-acid battery recycling industry has been determined by AQMD staff to be the highest stationary source emitters of lead in Los Angeles County. Staff's analysis has shown this industry to be the only known stationary source category that has the potential to cause violations of the new lead NAAQS. The lead emission sources in the nonattainment area are described in Chapter 3.

LEAD HEALTH EFFECTS

Lead is generally emitted in the form of particles, which can end up being deposited in the human lung as well as in water, soil, and dust. Human exposure to lead occurs in a variety of ways with common routes being that of inhalation and ingestion. Once in the body, lead is quickly absorbed into the bloodstream and can result in a broad range of adverse health effects. The most widely used indicator of lead exposure in many studies is the amount of lead measured in whole blood because of the direct relationship between blood lead (PbB) levels and health effects. Clinical effects resulting from high-level lead exposure include nervous and reproductive system disorders, neurological and physical developmental effects, cognitive and behavioral changes, and hypertension. Young children are especially susceptible to the effects of environmental lead because they are more vulnerable to certain biological effects of lead including learning disabilities, deficits in IQ, and behavioral problems.[1] Based on studies reviewed by the EPA's Clean Air Scientific Advisory Committee (CASAC), it was concluded that a "population loss of 1-2 IQ points" resulting from exposure to ambient air lead concentrations "is highly significant from a public health perspective."

Under the federal CAA, lead is classified as a "criteria pollutant." Lead has observed health effects at ambient concentrations. The EPA has thoroughly reviewed the lead exposure and health effects research which indicates that PbB concentrations in a range of 5-10 µg/dL, or possibly lower, could likely result in neurocognitive effects in children. The report further states that "there is no level of lead exposure that can yet be identified with confidence, as clearly not being associated with some risk of deleterious health effects."[2]

[1] Environmental Protection Agency, "Lead in Air," (*http://www.epa.gov/air/lead/health.html*), June 12, 2009.

[2] Environmental Protection Agency, Office of Research and Development, "Air Quality Criteria Document for Lead, Volumes I-II," October 2006.

The EPA has determined that a primary and secondary standard of 0.15 $\mu g/m^3$ is requisite to provide an adequate margin of safety that would ensure the protection of public health from the health effects associated with lead exposure. [3]

HISTORY OF CONTROL EFFORTS

The CAA requires EPA to set national air quality standards for lead and five other pollutants considered harmful to public health and the environment (the other pollutants are ozone, particulate matter, nitrogen oxides, carbon monoxide, and sulfur dioxide). Federal, state and regional control efforts are designed to meet those standards by CAA-mandated deadlines. Below is a chronology of federal, state and regional lead control efforts relevant to the Basin, including the nonattainment area in Los Angeles County:

- In November 1970, CARB set the state ambient air quality standard for lead at 1.5 $\mu g/m^3$ averaged over 30 days.
- In October 1978, EPA promulgated primary and secondary NAAQS for lead under section 109 of the Act (43 FR 46246). Both primary and secondary standards were set at a level of 1.5 $\mu g/m^3$ averaged over a calendar quarter.
- In 1987, the California legislature adopted the Air Toxics "Hot Spots" Information and Assessment Act (AB 2588). The goals of the Act are to collect emissions data of toxic air contaminants (TACs), identify facilities having localized impacts, to determine health risks, and to notify affected individuals. Facilities with high health risks must reduce their risks to the community by incorporating risk reduction plans.
- In December 1990, AQMD adopted Rule 1401 – New Source Review of Toxic Air Contaminants. The rule applies to new, relocated, and modified permit units with TAC emissions. Lead was added to the Rule 1401 list of TACs in 1992.
- In September 1992, AQMD adopted Rule 1420 – Emissions Standard for Lead. The rule incorporated the state ambient air quality standard and required control devices on lead emission points, control efficiency requirements for lead control devices, housekeeping, and monitoring or modeling of ambient air quality.
- In October 1992, Office of Environmental Health Hazard Assessment (OEHHA) classified lead as a carcinogenic TAC.
- In January 1993, CARB adopted the Airborne Toxic Control Measure (ATCM) for Emissions of TAC Metals from Non-Ferrous Metal Melting.
- In April 1994, AQMD adopted Rule 1402 – Control of Toxic Air Contaminants from Existing Sources. The purpose of this rule is to reduce the health risk associated with emissions of TACs from existing sources by specifying health limits for cancer and non-cancer compounds applicable to total facility emissions and by requiring facilities to implement risk reduction plans to achieve specified risk limits, as required by the AB 2588 "Hot Spots" and this rule.

[3] Environmental Protection Agency, "National Ambient Air Quality Standards for Lead; Final Rule," 40 CFR Parts 50, 51, 53, and 58, November 2008.

- In April 1997, CARB identified lead compounds (including inorganic lead) as a TAC due to the health impacts associated with neurodevelopmental impairment in children, increased blood pressure in adults and cancer.
- In June 1997, EPA adopted the National Emissions Standards for Hazardous Air Pollutants (NESHAP) from Secondary Lead Smelting. The federal regulation required lead emission concentration limits of lead control devices, control of process fugitive emissions, monitoring, recordkeeping, and reporting.
- In September 1998, CARB established a cancer potency value of 1.2×10^{-5} per $\mu g/m^3$ for inorganic lead exposure.
- In March 2001, CARB developed "Risk Management Guidelines for New, Modified and Existing Sources of Lead".
- In October 2008, EPA amended the NAAQS for lead from 1.5 $\mu g/m^3$ to 0.15 $\mu g/m^3$ requiring attainment by December 31, 2015, using a rolling 3-month average evaluated over 3-year period.
- In November 2010, AQMD adopted Rule 1420.1 – Emissions Standard for Lead from Large Lead-Acid Battery Recycling Facilities. The purpose of this rule is to protect public health while ensuring attainment with the 2008 lead NAAQS.

IMPACT OF CONTROL EFFORTS

The ambient air quality standards for lead were set at 1.5 $\mu g/m^3$ by both CARB and EPA in 1970, and 1978, respectively. Air pollution controls have had a positive impact on the Basin's air quality relative to lead. There have been no violations of the federal and state standards at the AQMD's regular air monitoring stations since 1982. The major reductions were due to removal of lead from gasoline, in addition to adoption of AQMD Rule 1420 - Emissions Standard for Lead. Although past controls have resulted in substantial lead emission reductions, the 2008 NAAQS for lead of 0.15 $\mu g/m^3$ may require additional controls to ensure attainment of the federal lead air quality standards.

Air quality summaries for ambient lead in the nonattainment areas of the Basin as well as the health effects of lead are briefly discussed in Chapter 2.

CAA PLANNING REQUIREMENTS ADDRESSED BY THIS SIP

In November 1990, Congress enacted a series of amendments to the CAA intended to intensify air pollution control efforts across the nation. One of the primary goals of the 1990 CAA Amendments was an overhaul of the planning provisions for those areas not currently meeting NAAQS. The CAA identifies specific emission reduction goals, requires both a demonstration of reasonable further progress and an attainment demonstration, and incorporates more stringent sanctions for failure to attain or to meet interim milestones.

In October 2008, the EPA strengthened the NAAQS for lead from 1.5 $\mu g/m^3$ to 0.15 $\mu g/m^3$ requiring attainment by December 31, 2015, using a rolling 3-month average evaluated over a 3 year period. The Los Angeles County portion of the South Coast Air Basin, excluding

San Clemente and Santa Catalina Islands (Southern Los Angeles County), was designated as nonattainment for the 2008 lead NAAQS based on air quality data from 2007-2009.

There are several sets of general planning requirements, both for nonattainment areas [Section 172(c) and 191 of the CAA] and for implementation plans in general [Section 110(a) (2)]. These requirements are listed and very briefly described in Tables 1-2 and 1-3, respectively. The general provisions apply to all applicable pollutants unless superseded by pollutant-specific requirements.

TABLE 1-2

Nonattainment Plan Provisions
[CAA Section 172(c)]

Requirement	Description
Reasonably Available Control Measures (RACM)	Implementation of all reasonably available control measures as well as Reasonably Available Control Technology (RACT) as expeditiously as practicable.
Reasonable Further Progress (RFP)	Provision for reasonable further progress which is defined as "such annual incremental reductions in emissions of the relevant air pollutant as are required for the purpose of ensuring attainment of the applicable national ambient air quality standard by the applicable date."
Emission Inventory	Development and periodic revision of a comprehensive, accurate, current inventory of actual emissions from all sources.
Allowable emission levels	Identification and quantification of allowable emission levels for major, new, or modified stationary sources.
Permits for new and modified stationary sources	Permit requirements for the construction and operation of major new or modified stationary sources.
Other measures	Inclusion of all enforceable emission limitations and control measures as may be necessary to attain the standard by the applicable attainment deadline.
Contingency measures	Implementation of contingency measures to be undertaken in the event of failure to make reasonable further progress or to attain the NAAQS.

TABLE 1-3

General CAA Requirements for Implementation Plans

Requirement	Description
Ambient monitoring	An ambient air quality monitoring program. [Section 110(a)(2)(B)]
Enforceable emission limitations	Enforceable emission limitations or other control measures as needed to meet the requirements of the CAA [Section 110(a)(2)(A)]
Enforcement and regulation	A program for the enforcement of adopted control measures and emission limitations and regulation of the modification and construction of any stationary source to assure that the NAAQS are achieved. [Section 110(a)(2)(C)]
Interstate transport	Adequate provisions to inhibit emissions that will contribute to nonattainment or interfere with maintenance of NAAQS or interfere with measures required to prevent significant deterioration of air quality or to protect visibility in any other state. [Section 110(a)(2)(D)]
Adequate resources	Assurances that adequate personnel, funding, and authority are available to carry out the plan. [Section 110(a)(2)(E)]
Source testing and monitoring	Requirements for emission monitoring and reporting by the source operators. [Section 110(a)(2)(F)]
Emergency Authority	Ability to bring suit to enforce against source presenting imminent and substantial endangerment to public health or environment [Section (a)(2)(G)]
Plan revisions	Provisions for revising the air quality plan to incorporate changes in the standards or in the availability of improved control methods. [Section 110(a)(2)(H)]
Other CAA requirements	Adequate provisions to meet applicable requirements relating to new source review, consultation, notification, and prevention of significant deterioration and visibility protection contained in other sections of the CAA. [Section 110(a)(2)(I),(J)]
Impact assessment	Appropriate air quality modeling to predict the effect of new source emissions on ambient air quality. [Section 110(a)(2)(K)]
Permit fees	Provisions requiring major stationary sources to pay fees to cover reasonable costs for reviewing and acting on permit applications and for implementing and enforcing the permit conditions. [Section 110(a)(2)(L)]
Local government participation	Provisions for consultation and participation by local political subdivisions affected by the plan. [Section 110(a)(2)(M) & 121]
Equivalent techniques	Provisions allowing usage of equivalent modeling, emission inventory, and planning procedures, unless determined by the

Requirement	Description
	administrator that the techniques are, in the aggregate, less effective than the methods specified by the administrator. [Section 172(c)(8)]

EPA requires a public hearing on many of the required elements in SIP submittals before considering them officially submitted. The AQMD's SIP submittal process includes a public workshop, 30 days public notice, and a public hearing before the AQMD Governing Board prior to submittal.

The CAA requires SIPs for most nonattainment areas to demonstrate reasonable further progress (RFP) toward attainment through emission reductions phased in from the time of the SIP submission until the projected attainment date. The RFP requirements in the CAA are intended to ensure that the lead nonattainment area provide for sufficient emission reductions to attain the lead NAAQS. Chapter 6 provides an estimation of the emission levels at each of the milestone years compared to the CAA target levels, and how this SIP will demonstrate attainment.

The South Coast Air Basin portion of Los Angeles County, where the major lead emissions sources are located, is surrounded by mountains which act as barriers to airflow. Although there are a limited number of gaps in these mountains where transport has been documented, transport of lead emissions is highly unlikely, given the weight of lead particles and the rapid decrease in concentration with distance from a source. As a result, emissions sources in the South Coast portion of Los Angeles are not expected to have an impact on lead concentrations in other parts of the South Coast and as such will not be addressed in this SIP submittal.

STATE LAW REQUIREMENTS

The Health and Safety Code (H&SC) section 39607(e) requires CARB to establish and periodically review area designation criteria. Once CARB establishes health-based State ambient air quality standards to identify outdoor pollutant levels considered safe for the public, State law requires them to designate each area as attainment, nonattainment, nonattainment-transitional, or unclassified. In addition, H&SC section 39608 requires the CARB to use the designation criteria to designate areas of California and to annually review those area designations.

CARB made the first area designations for State ambient air quality standards (State standards) in 1989. Since then, CARB has reviewed the designations each year, making changes as needed. The California ambient air quality standard (CAAQS) for lead has remained the same at 1.5 $\mu g/m^3$ and therefore, no recent changes to designations have been made.

CHAPTER 2

LEAD AIR QUALITY IN LOS ANGELES COUNTY

Introduction
Ambient Measurements
Measurements at Source-Oriented Sites
Fence-line Measurements
Summary

INTRODUCTION

On October 15, 2008, EPA revised the National Ambient Air Quality Standard (NAAQS) for Total Suspended Particulate (TSP) lead, lowering it from 1.5 micrograms per cubic meter ($\mu g/m^3$) (calculated as a quarterly average) to a more stringent 0.15 $\mu g/m^3$ (rolling three-month average "not to be exceeded" over a three-year period) for both the primary and the secondary standard. The final rule was published in the Federal Register on November 12, 2008. The new rule and a revision on November 22, 2010 also established minimum requirements for lead monitoring, including monitoring adjacent to major lead emission sources ("source-oriented" monitors) emitting over 0.5 tons of lead per year. AQMD has been collecting TSP lead monitoring data in the Los Angeles County portion of the South Coast Air Basin since 1975 throughout its routine monitoring network. As described below, AQMD has also maintained source-oriented monitors at various industrial facilities over the past several years. For the most part, the AQMD's existing lead monitoring network meets the new federal monitoring requirements for lead. The only exception was a new monitoring requirement leading to sampling at Van Nuys Airport, implemented in 2010 as described below.

In 1990, EPA requested that AQMD collect ambient air particulate samples near large lead handling facilities. As a result, long-term monitoring at sites located near several of these facilities (i.e. source-oriented sites) began in 1991. Also, additional lead sampling has been conducted by AQMD since the adoption of Rule 1420 (Emissions Standard for Lead) on September 11, 1992. The purpose of Rule 1420 is to reduce lead emissions from non-vehicular sources. It applies to all facilities that use or process materials containing lead, including primary or secondary lead smelters, foundries, and lead-acid battery manufacturers or recyclers, as well as facilities that produce lead-oxide, brass, and bronze. Under Rule 1420, facilities shall not discharge lead emissions into the atmosphere which cause ambient concentrations beyond the property line to exceed 1.5 $\mu g/m^3$ averaged over 30 consecutive days (30-day rolling average). This concentration reflects the current California Ambient Air Quality standard (CAAQS) for lead (also a "not to be exceeded" standard), which has a level that is consistent with, and a form that is more stringent than, the previous federal standard (1.5 $\mu g/m^3$ averaged over a calendar quarter).

Furthermore, on November 5, 2010, AQMD adopted Rule 1420.1 to establish additional requirements for large lead-acid battery recycling facilities (those that process or have ever processed 50,000 tons or more of lead per year), to protect public health, and to ensure attainment of the new 2008 NAAQS for lead in the Los Angeles County portion of the South Coast Air Basin. Rule 1420.1 requires total enclosures for any process associated with the preparation, recovery, refining, and storage of lead-containing material and requires pollution control devices on the enclosures and on lead emission point sources. Rule 1420.1 also includes housekeeping, monitoring potential lead emissions around the facility's perimeter (i.e. fence-line monitoring), and recordkeeping requirements. The trigger level specified in Rule 1420.1 is 0.15 $\mu g/m^3$ averaged over any consecutive 30-day period (30-day rolling average). As of July 1, 2011, any battery recycling facility exceeding an ambient lead concentration of 0.12 $\mu g/m^3$ must submit a Compliance Plan identifying additional lead emission reduction measures, thereby helping to avoid potential subsequent violations of the federal standard.

The results of these sampling programs are summarized and discussed in this chapter. All information reported below refers to TSP lead measurements taken between 1975 and 2010 in the Los Angeles County portion of the South Coast Air Basin only. The discussion is divided into:

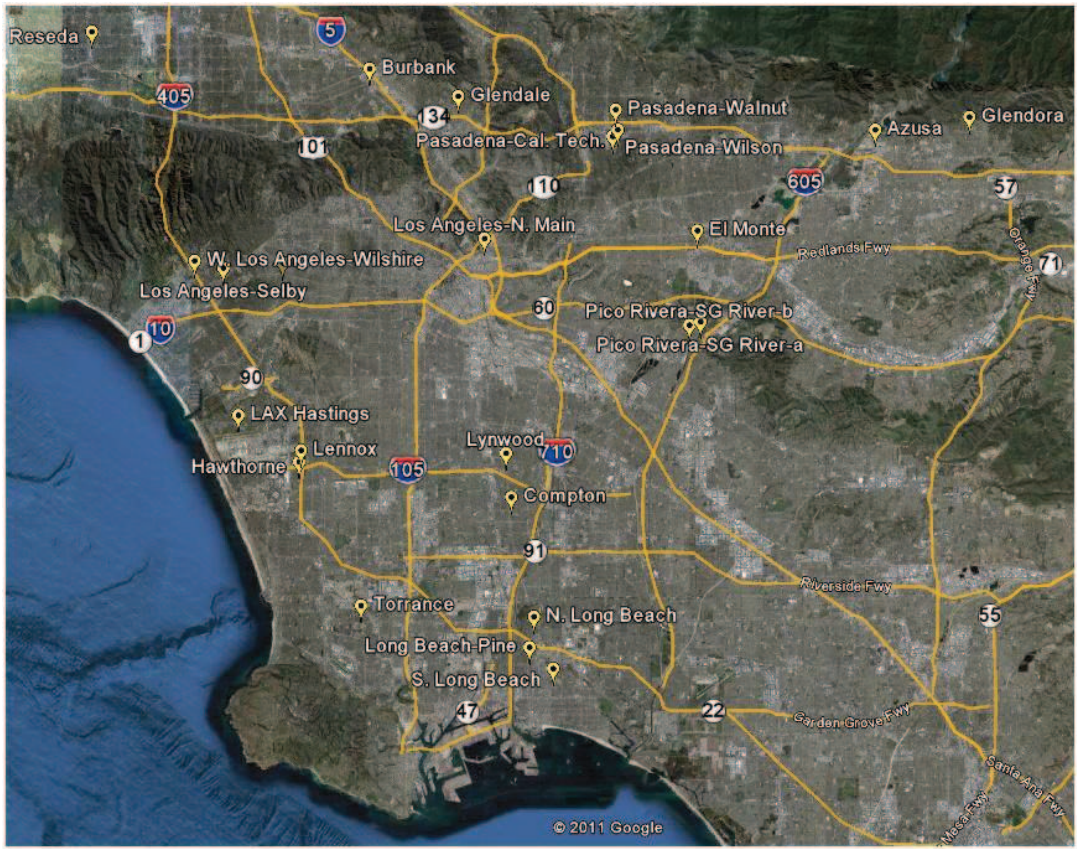
- Ambient measurements (non-source-oriented sites at permanent AQMD regional network monitoring stations that are not near local emissions sources)
- Source-oriented measurements (sites adjacent to lead-emitting facilities, beyond the property line, eligible for NAAQS comparison)
- Fence-line measurements (sites operated by the lead-emitting facility as required by AQMD rules 1420 or 1420.1, generally located just inside the fence-line on facility property or in non-public areas, and thus not eligible for NAAQS comparison)

AMBIENT MEASUREMENTS

Since 1975, AQMD has been measuring ambient lead concentrations at multiple locations (Figure 2-1), typically using a 1-in-6 day sampling schedule, but in some cases sampling more frequently. All sites shown in Figure 2-1 are part of AQMD's current or past monitoring network in the Los Angeles County portion of the South Coast Air Basin. The monitoring stations in Azusa, Burbank, Long Beach (North Long Beach Blvd.), Lynwood, and Los Angeles (North Main St.) have the longest continuous periods of record (Table 2-1).

FIGURE 2-1

Location of all AQMD's network lead monitoring sites in the Los Angeles County portion of the Basin since 1975



Trends in monthly average TSP lead concentrations for all available network sites are shown in Figure 2-2. Noticeably, lead levels have been reduced by two orders of magnitude since 1975 (from values as high as 7.49 µg/m^3 in 1976 to an urban background level of about 0.01 µg/m^3), following the phase-out of lead in gasoline fuels that began during the 1970s. When the EPA first adopted a lead standard in 1978, it was estimated that over 90% of ambient lead concentrations were attributable to the use of lead in gasoline fuels.

Monthly average lead concentrations at all AQMD's network sites have been at or below 0.05 µg/m^3 since 2004. Note that lead concentrations in Figure 2-2 are not directly comparable to the form of the federal standard (monthly vs. a three-month average), but are provided to better illustrate long-term trends and the substantial reduction in the atmospheric levels of lead that has occurred in the Los Angeles County portion of the South Coast Air Basin in the past two decades. As shown in Table 2-1, none of the design values for the 2008-2010 or 2009-2011 time periods (i.e. highest valid 3-month site-level mean over a three year period) is close to the current 2008 NAAQS for lead (0.15 µg/m^3). All monthly-average lead data presented here have been

calculated from daily (24-hour) average values downloaded from EPA's Air Quality System (AQS) database. A list of all available daily, one-month, and three-month average lead concentrations measured at all network sites since 1975 can be found in the supplemental CD provided with this document in Appendix I.

TABLE 2-1

AQMD's monitoring network sites in the Los Angeles County portion of the Basin measuring Total Suspended Particulate (TSP) lead since 1975 with available design values for the 2008-2011 timeframe

Site Name	Site Address	Sampling		Lead Design Value ($\mu g/m^3$) (2008-2010)*	Lead Design Value ($\mu g/m^3$) (2009-2011)^
		Start	End		
Azusa	803 N. Loren Ave., Azusa	01/04/80	12/27/09	NA	NA
Burbank	228 W. Palm Ave., Burbank	02/23/75	12/27/09	NA	NA
Compton	700 North Bullis Rd., Compton	11/02/08	Ongoing	NA	0.02
El Monte	915 Flair Dr., El Monte	01/13/85	06/09/89	NA	NA
Glendale	145 N. Howard St., Glendale	03/19/75	12/20/75	NA	NA
Glendora	840 Laurel, Glendora	12/05/80	03/31/84	NA	NA
Hawthorne	5234 W. 120th Street, Hawthorne	01/08/86	03/28/04	NA	NA
Lancaster	45547 N. Beech St., Lancaster	01/04/80	12/28/86	NA	NA
Lennox	11408 La Cienega Blvd., Los Angeles	01/04/80	10/28/85	NA	NA
Long Beach-Pine Ave.	2655 Pine Ave., Long Beach	02/11/75	03/27/78	NA	NA
Long Beach-N. LB Blvd.	3648 N. Long Beach Blvd., Long Beach	05/03/80	Ongoing	0.01	0.01
S. Long Beach	1305 E. Pacific Coast Hwy., Long Beach	08/07/03	Ongoing	0.01	0.01
Los Angeles-Selby Ave.	2050 Selby Ave, Los Angeles	02/23/75	10/18/80	NA	NA
Los Angeles-N. Main St.	1630 N. Main St., Los Angeles	01/04/80	Ongoing	0.02	0.02
LAX Hastings	7201 W. Westchester Pkwy., Los Angeles	04/15/04	Ongoing	0.01	0.01
Lynwood	11220 Long Beach Blvd., Lynwood	01/04/80	10/27/08	NA	NA
Pasadena-Cal. Tech.	Cal. Tech. (Keck Lab.), Pasadena	02/11/75	03/27/78	NA	NA
Pasadena-Walnut St.	1196 E. Walnut St., Pasadena	01/04/80	08/28/83	NA	NA
Pasadena-Wilson Ave.	752 S. Wilson Ave., Pasadena	04/11/82	12/28/86	NA	NA
Pico Rivera-SG River-a	3713 San Gabriel River Pkwy., Pico Rivera	01/04/80	04/22/05	NA	NA
Pico Rivera-SG River-b	4144 San Gabriel River Pkwy., Pico Rivera	09/19/05	Ongoing	0.02	0.02
Reseda	18330 Gault St., Reseda	01/04/80	04/26/86	NA	NA
Torrance	2300 Carson St., Torrance	02/11/75	09/23/78	NA	NA
West Los Angeles-Rovertson	1535 Robertson Blvd., West Los Angeles	01/04/80	02/18/85	NA	NA
West Los Angeles-Wilshire	11301 Wilshire Blvd., Los Angeles	06/05/84	12/28/86	NA	NA

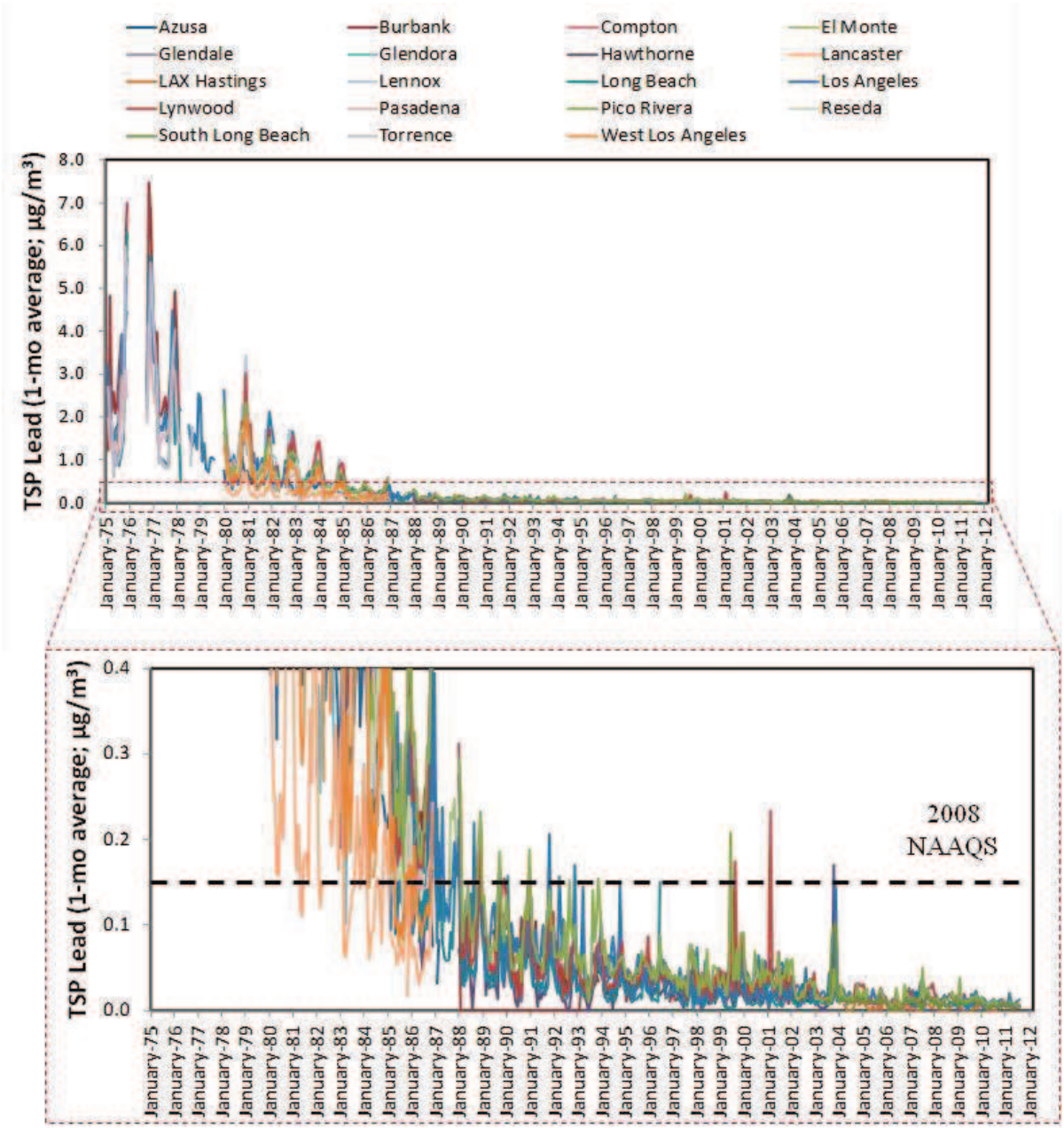
*Highest valid 3-month site-level mean over the most recent 38-month period (November 2007-December 2010)

^Preliminary value calculated as the highest valid 3-month site-level mean over the most recent 35-month period (November 2008-September 2011)

Lead data from October 2011 to December 2011 will be available soon

FIGURE 2-2

Monthly average Total Suspended Particulate (TSP) lead concentrations at all network sites in the Los Angeles County portion of the Basin from 1975 to 2011. The dotted line in the magnified portion of the graph represents the current 2008 NAAQS for lead (0.15 µg/m^3)



MEASUREMENTS AT SOURCE-ORIENTED SITES

TSP lead concentration data have been collected by AQMD during the past two decades in the vicinity of the following facilities, generally using the typical 1-in-6 day sampling schedule, but in some cases sampling more frequently:

- **Exide Technologies**
  - *Vernon Facility (2700 South Indiana Street, Vernon)*: this secondary lead smelter plant recycles lead batteries and other lead bearing material. Since February 1991, AQMD has operated source-oriented lead monitors at four locations at different distances from the facility's perimeter (Figure 2-3a). Sampling at three of these source-oriented sites is still ongoing (Table 2-2).
  - *Commerce Facility (5909 E Randolph St, Commerce)*: this is a lead oxide production facility. From January 1999 to May 2006, AQMD operated one lead monitoring site about 300 m north-west of the facility's perimeter (Table 2-2; Figure 2-3b).
- **Quemetco Inc. (720 South 7th Avenue, City of Industry)**
  - This secondary lead smelter plant recycles lead bearing scrap, primarily in the form of spent lead-acid batteries, and produces lead and lead alloy. AQMD has operated source-oriented sites around the facility at three locations since February 1991 (Figure 2-3c). Sampling at one of these sites is still ongoing (Table 2-2).
- **Trojan Battery (9440 Ann Street, Santa Fe Springs)**
  - This company designs and manufactures deep cycle batteries. AQMD has been operating a source-oriented site less than 100 m south-west of this facility since January 2001 (Table 2-2; Figure 2-3d).

It should be noted that current EPA monitoring requirements for lead include a requirement to monitor at all facilities emitting over 0.5 tons of lead per year, excluding airports for which a pilot program for measuring lead at specified airports was required. However, monitoring at all facilities emitting over 1.0 tons per year, including airports, is also required. Therefore, in 2010, a lead monitor was deployed at **Van Nuys Airport (16461 Sherman Way, Van Nuys)**, about 80 meters east of the main runway blast fence and downwind of the majority of the main runway (Table 2-2; Figure 2-3e). This is a general aviation airport where aircraft with piston-driven engines still use leaded avgas.

Trends in monthly-average TSP lead concentrations for all of AQMD's source-oriented sites are shown in Figure 2-4. Overall, lead levels have been reduced substantially since the early 1990s (from values as high as 3.66 $\mu g/m^3$ in 1991 to concentrations that are close to or below 0.15 $\mu g/m^3$ in 2011). This improvement reflects the reduction in lead emissions from large battery recycling facilities following the adoption of rules 1420 and 1420.1. However, as shown in Table 2-2, the 2008-2010 design value for lead calculated at the Exide-Rehrig station (about 15 m east of Exide Technologies in Vernon) was 2.49 $\mu g/m^3$, which was well above the current 2008 NAAQS. The 2008-2010 design value for lead calculated for the Exide-AT&SF site (150 m north-east of the same facility) was substantially lower (0.22 $\mu g/m^3$), but still above the current federal standard.

The preliminary 2009-2011 design values in Table 2-2 show considerable improvement. The only site above the new 2008 NAAQS for lead is the Rehrig site at Exide Technologies with a three-year design value of 0.66 $\mu g/m^3$. Furthermore, as shown in Figure 2-4, the most recent month of data (December 2011) at the Rehrig site is actually below the 0.15 $\mu g/m^3$ level. Since lead is typically found in larger particles (those with an aerodynamic diameter larger than 2.5 μm) its atmospheric concentration decreases rapidly from the point of release and, as a result, lead impacts are localized. With the exceptions listed above, monthly average lead concentrations at all AQMD's source-oriented sites have been below 0.15 $\mu g/m^3$ since November 2008 and suggest a decreasing trend (Figure 2-4). Monthly average values at Van Nuys Airport have never exceeded 0.04 $\mu g/m^3$.

The monthly average data shown in Figure 2-4 are not directly comparable to the three-month average form of the federal standard specified by EPA, but are provided to better illustrate long-term trends and the substantial reduction in the atmospheric concentration of lead that has occurred in the Los Angeles County portion of the South Coast Air Basin since the mid 70s. All lead measurements presented in this section have been calculated from daily (24-hour) average values measured by AQMD staff. Some of this special monitoring data is not available in AQS, but it has been included in the supplemental CD provided with this document, which also includes all available daily, one-month, and three-month average lead concentrations for all source-oriented sites. This data is public and can be requested through the Public Information Records Act request process.

FIGURE 2-3

Location of all source-oriented sites operated by AQMD near:
a) Exide technology (Vernon facility),
b) Exide Technology (Commerce facility),
c) Quemetco Inc.,
d) Trojan Battery, and
e) Van Nuys airport.

TABLE 2-2

AQMD's source oriented sites measuring Total Suspended Particulate (TSP) lead since 1991 with available design values for the 2008-2011 timeframe

Facility Name and Address	Source-oriented Site Name and Address	Sampling		Lead Design Value (µg/m^3) (2008-2010)*	Lead Design Value (µg/m^3) (2009-2011)*
		Start	End		
EXIDE TECH (VERNON) 2700 South Indiana Street, Vernon	**Exide-Ayers 1** 2249 Ayers Ave., Commerce	02/05/91	10/27/92	NA	NA
	Exide-Ayers 2 Ayers and Washington Intersection, Vernon	6/23/2008	Ongoing	NA	0.03
	Exide-AT&SF AT&SF Railroad Yard, Washington Blvd., Vernon	04/19/91	Ongoing	0.22	0.08
	Exide-Rehrig 4010 East 26th Street, Vernon, CA	11/14/2007	Ongoing	2.49	0.66
EXIDE TECH (COMMERCE) 5909 E Randolph St, Commerce	**Exide-61st Street** 61st St., Commerce	01/06/99	05/31/06	NA	NA
QUEMETCO INC. 720 S 7th Ave, Industry	**Industry-7th Ave** 500 S. 7th Ave, Industry^*	2/17/1991^	Ongoing	NA**	0.11#
	Industry-Lake Ave 14755 E. Salt Lake Ave., Industry	03/13/91	09/15/91	NA	NA
	Industry-Post office 500 S. 7th Ave, Industry^*	01/06/99	12/26/00	NA	NA
TROJAN BATTERY 9440 Ann Street, Santa Fe Springs	**Santa Fe Springs** 9440 Santa Fe Springs Rd, Santa Fe Springs^^	01/01/01	Ongoing	0.12	0.12#
VAN NUYS AIRPORT 16461 Sherman Way, Van Nuys	**Van Nuys Airport** 16461 Sherman Way, Van Nuys	01/02/10	12/22/10	NA	NA

*Highest valid 3-month site-level mean over the most recent 38-month period (November 2007-December 2010)

#Preliminary value calculated as the highest valid 3-month site-level mean over the most recent 35-month period (November 2008-September 2011)

Lead data from October 2011 to December 2011 will be available soon

^Sampling was interrupted on October 1992 and resumed on January 2001

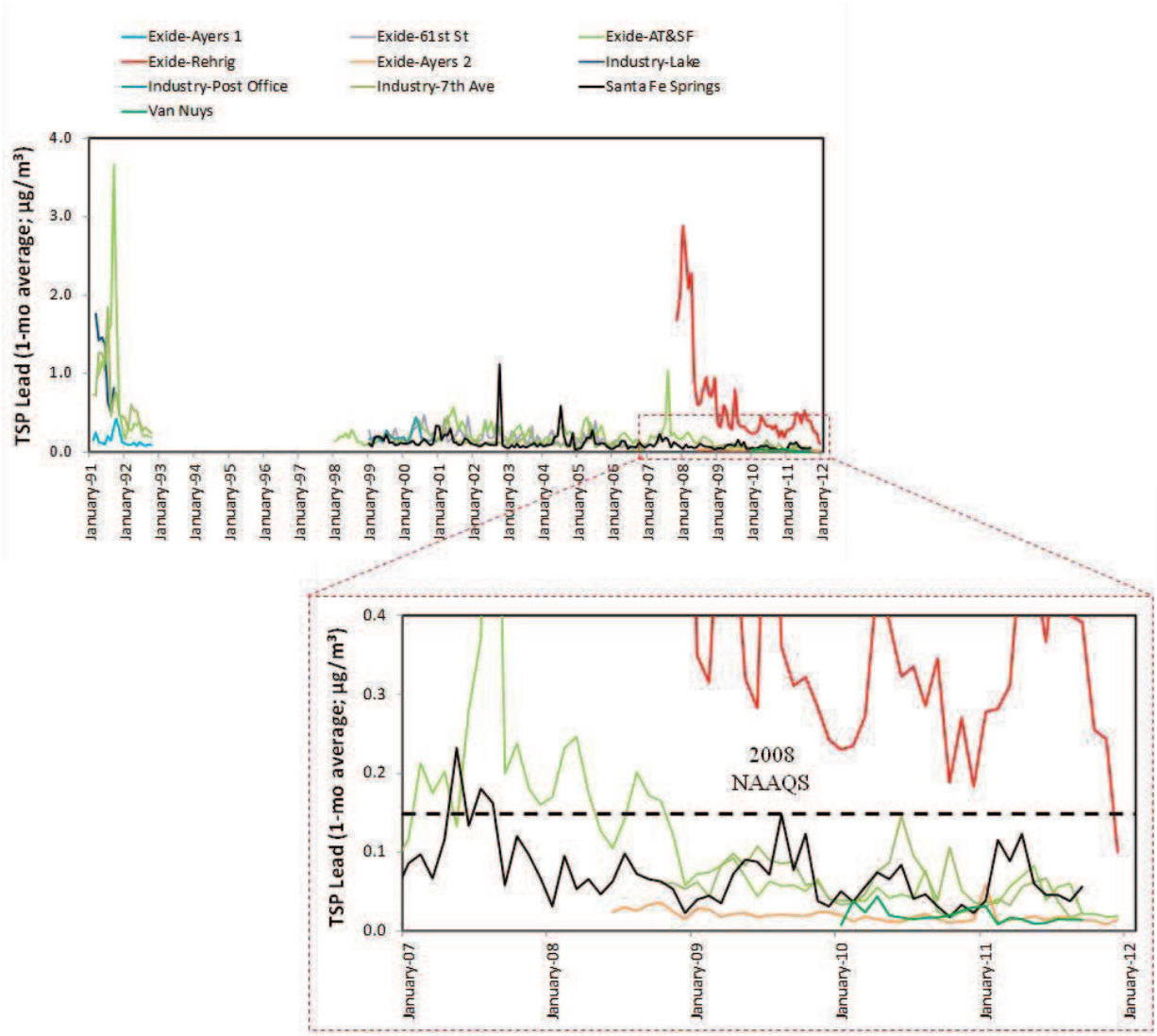
**Sampling was interrupted on December 2006 and resumed on October 2008

^*On 10/06/2003 sampler was moved move to a nearby location (same address)

^^On 01/01/2001 sampler was moved from 9440 Santa Fe Springs Rd to 9331 Santa Fe Springs Rd

FIGURE 2-4

Monthly average Total Suspended Particulate (TSP) lead concentrations at all source-oriented sites from 1991 to 2011. The dotted line in the magnified portion of the graph represents the current 2008 NAAQS for lead (0.15 µg/m^3)



FENCE-LINE MEASUREMENTS

Monitoring of TSP lead in close proximity to Exide Technologies (Vernon facility) and Quemetco Inc. (the two largest lead-acid battery recycling facilities in Los Angeles County) has been conducted by the facilities in accordance with AQMD Rules 1420 and 1420.1 for several years. Fence-line monitors are located at or inside the facility property line at the points of maximum expected ground level lead concentrations. They allow to identify specific areas of the recycling facility were lead emission is particularly high. Since monitoring locations are generally sited on facility property in non-public areas the measurements are not considered ambient air by EPA's definition for NAAQS comparison purposes. The data from these sites is included here to show trends in ambient levels at additional monitoring locations to those operated by AQMD, and to show the effectiveness of AQMD rule requirements for monitoring and reducing lead emissions from these facilities.

Exide Technologies – Vernon Facility

Since January 2006, this plant has been operating between three and six fence-line lead monitors (AT&SF, SE, SW, New NE, New N, and MID) near the property line (Figure 2-5). An additional monitor (New NW) was added on May 2008 but ceased sampling in June 2008 (Table 2-3). Lead samples are collected on a 1-in-3 day schedule, although higher sampling frequency is required by Rule 1420.1 at sites where measured concentrations are repeatedly high.

Average lead concentrations (expressed as 30-day rolling averages) recorded at the fence-line monitors installed near the Exide facility have continuously exceeded the 0.15 $\mu g/m^3$ over the majority of the sampling period (Figure 2-6). However, the most recent 30-day rolling averages from December 2011 have dropped below the limit established by Rule 1420.1, which became effective on January 1, 2012. The highest 30-day average TSP lead level (2.41 $\mu g/m^3$) was measured at the New N site in July 2009. Fugitive lead emissions from this battery recycling plant have been decreasing substantially since the initial measurements at Rehrig in 2009 and the adoption of Rule 1420.1 in 2010. As mentioned earlier, fugitive lead particles are relatively large, and tend to settle out quickly after they are emitted. As a result, the highest concentrations occur only in the immediate vicinity of an emission source, with concentrations dropping off rapidly with distance. In a recent guidance, EPA defined the critical transport distance for TSP lead as 2 miles.

FIGURE 2-5

Location of all fence-line monitoring sites (SW, MID, New N, New, NE, New NW, SE and AT&SF) operated near Exide Technologies (Vernon facility). The faded yellow area represents the perimeter of the facility

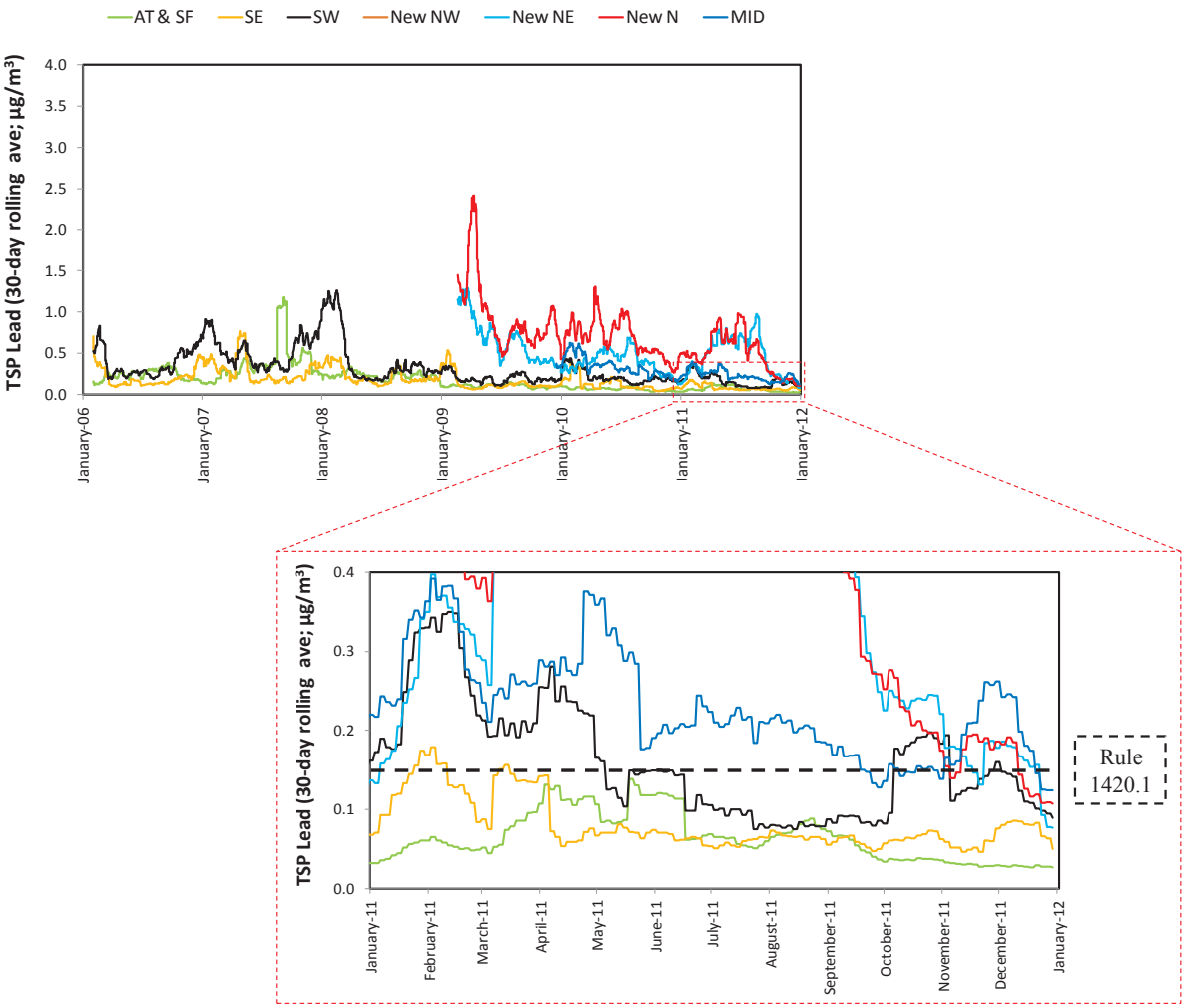
TABLE 2-3

Name and location of all fence-line and off-site monitoring stations operated by Exide Technologies (Vernon facility). Sampling at these locations has been conducted since 2006.

Site		Sampling	
Name	Monitoring Conducted by	Start	End
AT & SF	Exide	01/03/06	Ongoing
SE	Exide	01/03/06	Ongoing
SW	Exide	01/03/06	Ongoing
New NW	Exide	05/24/08	06/20/08
New NE	Exide	01/22/09	Ongoing
New N	Exide	01/22/09	Ongoing
MID	Exide	11/18/09	Ongoing

FIGURE 2-6

Fence-line 30-day rolling average lead concentrations at the Exide recycling battery facility. The dotted line in the lower portion of the Figure represents the current rule 1420.1 rule limit adopted by AQMD (0.15 µg/m^3)



Quemetco Inc.

This facility has been operating three fence-line lead monitors (Sites 1, 2 and 3) since May 2001 (Figure 2-7). An additional monitor (Site 4) was added in May 2003 and Site 3 was moved to the north-west corner of the plant and renamed as Site 5 on September 2007 (Table 2-4). Also in this case, lead samples are currently collected on a 1-in-3 day schedule per Rule 1420.1.

Figure 2-8 shows 30-day rolling average lead concentrations for all five fence-line monitors surrounding Quemetco Inc. The average levels have been decreasing in the past few years, and have been mostly below the Rule 1420.1 limit for the most recent six months of data. (Table 2-4) Quemetco. The highest 30-day average TSP lead concentration was 1.37 $\mu g/m^3$ and was measured at Site 1 in January 2006. Generally, fence-line monitors #1 and #5 (closely located to the part of the plant where the recycling process occurs) have exhibited the highest average values. Fugitive lead emissions from this and other lead-acid battery recycling facilities have been decreasing substantially since the adoption of Rule 1420.1 in 2010.

FIGURE 2-7

Location of all fence-line monitoring stations (Sites 1, 2, 3, 4 and 5) operated near Quemetco Inc. The faded yellow area represents the perimeter of the facility.

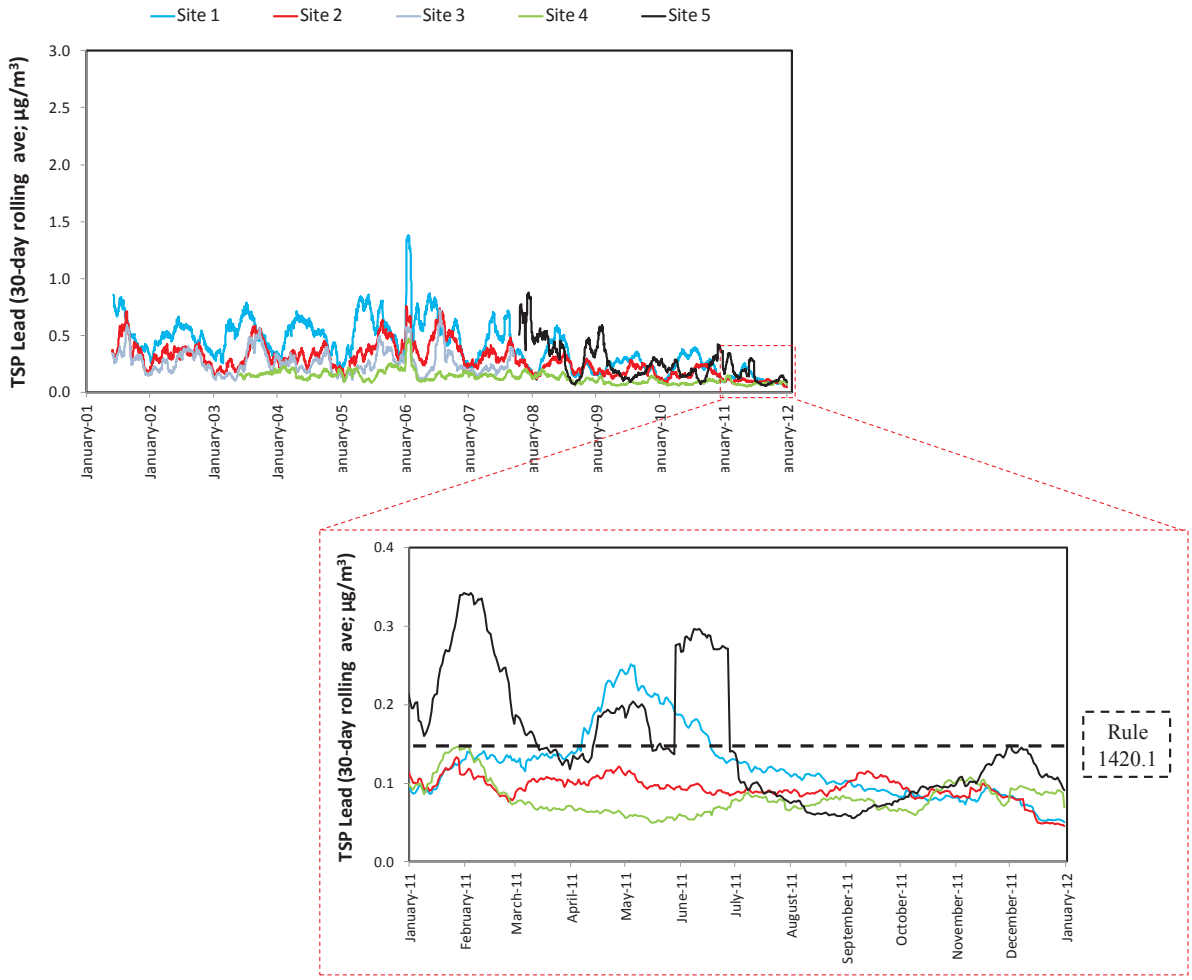
TABLE 2-4

Name and location of all fence-line monitoring stations operated by Quemetco Inc. Sampling at these locations has been conducted since 2001.

Site		Sampling	
Name	Monitoring Conducted by	Start	End
Site 1	Quemetco	05/09/01	Ongoing
Site 2	Quemetco	05/01/01	Ongoing
Site 3	Quemetco	05/01/01	18-Sep-07
Site 4	Quemetco	05/01/03	Ongoing
Site 5	Quemetco	09/21/07	Ongoing

FIGURE 2-8

Fence-line 30-day rolling average lead concentrations at the Quemetco recycling battery facility. The dotted line in the lower portion of the Figure represents the current rule 1420.1 rule limit adopted by AQMD (0.15 µg/m^3)



Note that since Trojan Batteries is not a lead-acid battery recycler and their throughput is below Rule 1420 criteria, no facility-operated fence-line monitor is required around or near its property line.

SUMMARY

The Los Angeles County portion of the South Coast Air Basin is the only area in California designated as non-attainment for the 2008 federal lead NAAQS (0.15 $\mu g/m^3$; measured as a rolling three-month average "not to be exceeded" over a three-year period). This nonattainment status is due to lead emissions from two large battery recycling facilities, Exide Technologies (located in the City of Vernon) and Quemetco Inc. (City of Industry). AQMD has jurisdiction over stationary sources in Los Angeles County and has been proactive in mitigating their impact on ambient lead concentrations through Rule 1420 (Emissions Standard for Lead) and Rule 1420.1, which applies specifically to large lead-acid battery recycling facilities. Although emissions from Exide and Quemetco are only recently below Rule 1420.1 limits, and are still causing a violation of the federal standard over the last three-year period, lead concentrations at all ambient network sites in the Los Angeles County portion of the Basin are well below the new 2008 NAAQS for lead, with typical levels of about 0.01 $\mu g/m^3$. Therefore, based on the historical lead measurements in the Los Angeles County, it is clear that the only potential locations for NAAQS exceedances are in the vicinity of these two battery-recycling facilities that are subject to AQMD Rule 1420.1.

CHAPTER 3

LEAD INVENTORY

Introduction
Emission Inventories
Base and Future Year Emissions
Uncertainty in the Inventory

INTRODUCTION

This chapter summarizes emissions that occurred in the Los Angeles County portion of the South Coast Air Basin, excluding San Clemente and Santa Catalina Islands (Southern Los Angeles County), during the base year 2010, and projected emissions for 2015.

These inventory years are selected to comply with federal and state Clean Air Act requirements. The 2010 base year emissions inventory reflects adopted air regulations with current compliance dates as of 2010; whereas 2015 emissions inventory shows projected emissions based on growth factors and compliance requirements between 2010 and 2015.

The emissions inventory is divided into four major classifications: point, area, off-road, and on-road sources. The 2010 base year point source emissions are based principally on reported data from facilities. The 2010 on-road emissions are calculated using the CARB EMFAC2007 V2.3 emission factor and the transportation activity data provided by the Southern California Association of Governments (SCAG) from their modified 2004 Regional Transportation Plan (2004 RTP) as used in the 2007 AQMP. [1] The 2010 area source and off-road emissions are also calculated based on 2007 AQMP inventories and projections. These emissions were developed primarily based on estimated activity levels and emission factors. The future projections rely upon the 2004 RTP, and the planning assumptions and the best available information from CARB's EMFAC for the on-road mobile source emissions inventory, CARB's off-road model for the off-road mobile source emission inventory, the latest point source inventories, emission limits in adopted rules, air quality modeling analysis, and SCAG's growth forecast assumptions utilized in the 2007 AQMP. It should be noted that the draft 2012 RTP forecasts and EMFAC2011 are not used in this analysis since they are not finalized yet, and the 2004 RTP and EMFAC2007 represent more conservative estimates.

EMISSION INVENTORIES

There are a variety of activities that can contribute to lead emissions, which are grouped into two general categories, stationary sources and mobile sources. Stationary sources can be further divided into "point" and "area" sources. Point sources have one or more identified and fixed pieces of equipment and emission points at a permitted facility which are reported to the AQMD through the Annual Emissions Reporting Program (AER). [2] Area sources consist of widespread and numerous smaller emission sources such as smaller permitted facilities, households, or other land uses. Mobile sources can also be grouped into two major categories, "on-road" and "other" mobile sources. On-road mobile sources include light-duty automobiles, light-, medium-, and heavy-duty trucks; and motorcycles. Examples of "other" mobile sources include aircraft, locomotives, construction equipment, mobile equipment, and off-road recreational vehicles.

Emissions of lead have dropped substantially over the past forty years. The reduction before 1990 is largely due to the phase-out of lead as an anti-knock agent in gasoline for on-road

[1] South Coast Air Quality Management District, "Final 2007 Air Quality Management Plan," June 2007.

[2] From AQMD's website, available at: http://www.aqmd.gov/aer/aer.html

automobiles. Substantial emission reductions have also been achieved due to enhanced controls in the metals processing industry.

Historically, the major source of lead air emissions has been gasoline-powered motor vehicles. Motor vehicle emissions of lead have been dramatically reduced due to the phase-out of leaded gasoline, but lead is still used as an additive in general aviation gasoline (avgas) and remains as a trace contaminant in other fuels. Avgas is only utilized in general aviation aircraft with piston engines, which are generally used for instructional flying, air taxi activities, recreational flying, and personal transportation. Emissions of lead from piston-engine aircraft using leaded avgas comprise approximately half of the national inventory of lead emitted to the air.

Sources of lead from stationary sources are mainly from larger industrial sources including but not limited to, metals processing, particularly primary and secondary lead smelters. Lead can also be emitted from sources such as iron and steel foundries; primary and secondary copper smelters; industrial, commercial, and institutional boilers; waste incinerators; mineral processes & glass manufacturing; and refineries. The lead-acid battery recycling industry has been determined by AQMD staff to be the highest stationary source emitters of lead in Los Angeles County. Staff's analysis has shown this industry to be the only known stationary source category that has the potential to cause violations of the new lead NAAQS.

BASE AND FUTURE YEAR EMISSIONS

For the purpose of this SIP, the baseline for lead emissions was set at 2010. Table 3-1 shows the 2010 lead emissions inventory and projected 2015 lead emissions inventory by major source category. Overall, about 4.25 tons per year (TPY) of primary lead emissions are emitted by mobile sources which accounts for 23 percent of the total lead inventory for the Los Angeles County. Within the mobile source category, emissions from aircraft make up about 93 percent of all mobile source emissions. This is due to the fact that lead is still used as an additive in general aviation fuel (avgas) for aircraft with piston engines. Seventy seven percent of total lead inventory is attributed to stationary sources with a 91 percent contribution from construction and demolition and paved road dust.

Stationary Sources

The 2010 base year stationary source emissions data presented in this chapter are based on the emissions data reported by each facility in the AQMD's 2010 AER program. Facilities calculate and report their emissions primarily based on their throughput data (e.g. fuel usage, material usage), appropriate emissions factors or source tests, and control efficiency (if applicable). Table 3-2 provides Los Angeles County 2010 lead emissions for all facilities with reported lead emissions over one pound per year. In 2010, no facility reported lead emissions greater than 0.50 TPY, the threshold for monitoring under U.S. EPA regulations to evaluate compliance with the lead NAAQS. Inventories in previous years showed Exide Technologies emitting over 0.50 TPY, and the AQMD continues to monitor at Exide even though the recent lower emissions inventory does not require it under the federal regulation.

The future emissions forecasts for stationary sources were derived using emissions from the 2010 base year, and emissions growth in various source categories between the base and future year. Demographic growth forecasts for various socioeconomic categories (e.g., population, housing, employment by industry), as well as industry growth factors utilized in the 2007 AQMP were used to estimate future emissions. It should be noted that 2015 inventories are based on growing the level of lead emissions estimated for 2010 using growth factors developed before the 2008 economic downturn. This results in a conservatively high estimate of future emissions for 2015.

Future emissions for the individual facilities that have the potential to cause NAAQS exceedances are discussed as part of the control strategy in Chapter 5.

Area sources include source categories associated with human activity causing emissions that take place over a wide geographic area. Construction and demolition, and unpaved road dust are examples of area sources. CARB maintains and updates estimates of the chemical composition and particle size fractions for each source profile which are then used in emission inventory and air quality models. Area source lead emissions are calculated by applying the latest CARB speciation profiles for lead to the total particulate matter emissions.[3] CARB particulate matter speciation profile #420 was used for estimating emissions from "Construction and Demolition" and profile #471 was used for estimating emissions from "Paved Road Dust." The lead fraction of PM emissions is 0.0557 percent for "Construction and Demolition" and 0.0124 percent for "Paved Road Dust." The source of lead in the PM emissions from these source categories are likely from the historical lead content in materials, such as paint and gasoline. Although the total lead inventory is dominated by these sources, the lead from area sources is emitted over a wide geographical area and the the ambient lead concentrations (illustrated in Chapter 2) show that they currently do not lead to high ambient levels or NAAQS exceedances.

Mobile Sources

The 2010 base year emissions inventory for all mobile sources categories are developed using the same methodology as described below, with the exception of aircraft emissions.

The mobile source emissions summaries were developed using emissions that occurred in Los Angeles County during the base year 2002 as identified in the "Final 2007 Air Quality Management Plan" for AQMD, and projected emissions for the years 2010, and 2015. On-road vehicle emissions are calculated using socioeconomic data and transportation models provided by SCAG, spatial distribution data from Caltrans' Direct Travel Impact Model (DTIM4), and EMFAC2007 V2.3 inventories obtained from CARB. The EMFAC2007 V2.3 reflects SCAG's revised baseline activity data from the modified 2004 RTP. The 2000 Census data, combined with SCAG's 2001 origin and destination survey data, are used in SCAG's modified 2004 RTP and in this SIP. Lead emissions from off-road vehicle categories (e.g., trains, ships, construction equipment, ports and rail cargo handling equipment) were developed primarily based on estimated activity levels, emission factors, and latest CARB speciation profiles for the particulate matter emissions. The forecasts for emissions were derived using: 1) emissions from the 2002 base year; 2) expected controls after implementation of District rules adopted by June 30, 2006,

[3] CARB speciation profiles can be viewed or downloaded from the following CARB link: http://www.arb.ca.gov/ei/speciate/interopt01.htm

and most CARB rules adopted as of June 2005; and 3) emissions growth in various source categories between the base and future years. Demographic growth forecasts for various socioeconomic categories (e.g., population, housing, employment by industry), developed by SCAG, were used in the modified 2004 RTP to estimate future emissions. Industry growth factors for 2002, 2010, and 2015 were provided by SCAG.

The aircraft lead emissions for 2010 were developed using historical airport specific operations data reported for 2008 and forecast operations data for 2010 and 2015 in the Terminal Area Forecast (TAF) system in the Federal Aviation Administration (FAA database) when available.[4] The TAF system is the official forecast of aviation activity at FAA facilities. Emissions from general aviation aircraft with piston engines were estimated using the methodology outlined in the 2008 National Emissions Inventory (NEI) developed by U.S. EPA, and scaling it to 2010 and 2015 using TAF forecast data.[5] The 2008 NEI utilizes Appendix B of the updated Technical Support Document (TSD) titled "'Calculating Piston-Engine Aircraft Airport Inventories for Lead for the 2008 National Emissions Inventory".[6] The methodology employed here uses the January 15, 2009 version of the Federal Aviation Administration (FAA) 5010 airport data report.[7] Table 3-3 provides the lead emission inventory for piston engine aircrafts for Los Angeles County airports.

The piston aircraft activity is reported to the FAA as general aviation (GA) or Air Taxi (AT) activity. Airport-specific inventories require information regarding landing and takeoff (LTO) activity by aircraft type. An aircraft operation is defined as any landing or takeoff event; therefore, to calculate LTOs, operations are divided by two. Most data sources from FAA report aircraft activity in numbers of operations, which, for the purposes of calculating lead emissions were converted to LTO events. To calculate LTOs for piston engine aircrafts, operations of GA and AT aircrafts were summed and then divided by two. The methodology and equations identified in Appendix B of the updated TSD was utilized to calculate lead emissions for piston engine aircrafts, as follows:

$$\text{Lead Emissions (TPY)} = (\text{piston-engine LTO}) * (7.7 \times 10^{-6})$$

Where piston-engine LTO = (GA LTO x 0.725) + (AT LTO x 0.231)

This methodology assumes certain fractions of GA and AT operations are piston-driven aircraft.

Several smaller airports did not have TAF forecast data, and those airports are indicated with an asterisk (*) in Table 3-3. For those facilities, 2010 and 2015 LTO estimates were developed using the average growth of the other Los Angeles County airports that are included in the TAF

[4] From FAA's website, "Terminal Area Forecast", available at: http://aspm.faa.gov/main/taf.asp.

[5] Environmental Protection Agency, "2008 National Emissions Inventory, Version 1," (http://www.epa.gov/ttn/chief/net/2008inventory.html), January 27, 2011.

[6] Environmental Protection Agency, "Documentation for Aircraft Component of the National Emissions Inventory Methodology," January 27, 2011

[7] From FAA's website, available at: http://www.faa.gov/airports_airtraffic/airports/airport_safety/airportdata_5010/

forecasts, applied to the actual reported 2008 LTOs. The growth ratios were developed as follows:

$$\text{Growth Ratio} = \frac{2010\ \text{LTO} * 7.7 \times 10^{-6}}{2008\ \text{LTO} * 7.7 \times 10^{-6}}$$

2010 Emissions = 2008 Emissions * Growth Ratio

Current U.S. EPA regulations require NAAQS monitoring at airports emitting over 1.0 ton per year of lead. Based on an earlier version of the U.S. EPA's 2008 NEI inventory that is not reflected in Table 3-3, Van Nuys Airport (VNY) exceeded this threshold and, based on that inventory, AQMD established a monitor near this source. Although a subsequent revision to the NEI, reflected in Table 3-3, showed less than one ton per year of lead emitted from VNY, AQMD continues to monitor there to demonstrate compliance with the NAAQS. Chapter 2 presents data from this site showing levels much lower than the national ambient lead standard.

As also shown in Table 3-3, the revised 2008 NEI calculates more than one ton per year of lead emissions from Long Beach/Daugherty Field (LGB). Although this would trigger the federal monitoring requirements if this level of emissions persisted, the 2010 and future year inventories show less than one ton per year. Thus, no lead monitoring is currently required.

TABLE 3-1

2010 & 2015 Lead Emission Inventory by Major Source Category
Los Angeles County (TPY)

SOURCE CATEGORY	2010	2015
STATIONARY SOURCES		
Fuel Combustion		
Electric Utilities	0.02	0.02
Cogeneration	0.01	0.01
Petroleum Refining (Combustion)	0.05	0.05
Manufacturing and Industrial	0.08	0.08
Service and Commercial	0.04	0.04
Total Fuel Combustion	**0.20**	**0.20**
Waste Disposal		
Incinerators	0.01	0.01
Total Waste Disposal	**0.01**	**0.01**
Petroleum Production & Marketing		
Petroleum Refining	0.03	0.03
Petroleum Production & Marketing	**0.03**	**0.03**
Industrial Processes		
Mineral Processes	0.06	0.06
Metal Processes	0.35	0.35
Glass and Related Products	0.02	0.02
Total Industrial Processes	**0.44**	**0.45**
Miscellaneous Processes		
Residential Fuel Combustion	0.02	0.02
Construction and Demolition	5.80	6.05
Paved Road Dust	6.83	6.91
Unpaved Road Dust	0.47	0.47
Fugitive Windblown Dust	0.06	0.06
Fires	0.01	0.01
Waste Burning and Disposal	0.03	0.03
Total Miscellaneous Processes	**13.22**	**13.56**
TOTAL STATIONARY SOURCES	**13.90**	**14.24**

TABLE 3-1 (Continued)

2010 & 2015 Lead Emission Inventory by Major Source Category
Los Angeles County (TPY)

SOURCE CATEGORY	2010	2015
MOBILE SOURCES		
On-Road Vehicles		
Light-Duty Passenger	0.09	0.09
Light & Medium Duty Trucks	0.06	0.07
Heavy-Duty Gas Trucks	0.00	0.00
Heavy-Duty Diesel Trucks	0.07	0.06
Total On-Road Vehicles	**0.23**	**0.22**
Other Mobile		
Aircraft	3.95	3.98
Trains	0.01	0.01
Ships & Commercial Boats	0.00	0.00
Off-Road Equipment	0.06	0.03
Total Other Mobile	**4.02**	**4.02**
Total On-Road Vehicles	**0.23**	**0.22**
Total Other Mobile	**4.02**	**4.02**
Total Mobile Sources	**4.25**	**4.24**
TOTAL ALL SOURCES	**18.15**	**18.48**

TABLE 3-2

2010 Lead Emissions by Facility Emitting Over One Pound per Year
Los Angeles County

Facility ID	Facility Name	2010 Lead Emissions (lbs/yr)	2010 Lead Emissions TPY
124838	EXIDE TECHNOLOGIES	607.42	3.04E-01
17325	ACE CLEARWATER ENTERPRISES	117.81	5.89E-02
800089	EXXONMOBIL OIL CORPORATION	99.44	4.97E-02
131249	BP WEST COAST PRODUCTS LLC,BP WILMINGTON	78.76	3.94E-02
13854	EAST LOS ANGELES COLLEGE	68.04	3.40E-02
7427	OWENS-BROCKWAY GLASS CONTAINER INC	48.22	2.41E-02
800030	CHEVRON PRODUCTS CO.	29.60	1.48E-02
124805	EXIDE TECHNOLOGIES	27.72	1.39E-02
800363	CONOCOPHILLIPS COMPANY	24.75	1.24E-02
140878	LIBERTY MFG INC	22.50	1.12E-02
800327	GLENDALE CITY, GLENDALE WATER & POWER	20.80	1.04E-02
4477	SO CAL EDISON CO	18.44	9.22E-03
44577	LONG BEACH CITY, SERRF PROJECT	18.07	9.04E-03
131003	BP WEST COAST PROD.LLC BP CARSON REF.	16.24	8.12E-03
21872	TROJAN BATTERY CO	12.66	6.33E-03
8547	QUEMETCO INC	11.21	5.61E-03
800026	ULTRAMAR INC (NSR USE ONLY)	9.20	4.60E-03
16338	KAISER ALUMINUM FABRICATED PRODUCTS, LLC	8.79	4.39E-03
800335	LA CITY, DEPT OF AIRPORTS	6.48	3.24E-03
123774	HERAEUS METAL PROCESSING, LLC	6.44	3.22E-03
800236	LA CO. SANITATION DIST	6.28	3.14E-03
37507	TROJAN BATTERY CO	6.05	3.02E-03
800362	CONOCOPHILLIPS COMPANY	5.60	2.80E-03
93399	BARRY CONTROLS	5.56	2.78E-03
800409	NORTHROP GRUMMAN SYSTEMS CORPORATION	5.19	2.60E-03
148236	AIR LIQUIDE LARGE INDUSTRIES U.S., LP	4.35	2.17E-03
83102	LIGHT METALS INC	2.62	1.31E-03
8927	GLOBE IRON FOUNDRY INC	1.87	9.35E-04
20604	RALPHS GROCERY CO	1.79	8.96E-04
7796	TECHNI-CAST CORP	1.78	8.89E-04
91868	THE STRELITZ CO INC	1.73	8.64E-04
152952	SA RECYCLING LLC DBA SA RECYCLING OF LA	1.67	8.33E-04
144010	L-3 COMMUNICATIONS ELECTRON TECH INC	1.35	6.73E-04

Facility ID	Facility Name	2010 Lead Emissions (lbs/yr)	2010 Lead Emissions TPY
800037	DEMENNO/KERDOON	1.26	6.28E-04
82613	ANCON MARINE INC	1.12	5.60E-04
37336	COMMERCE REFUSE TO ENERGY FACILITY	1.06	5.31E-04
154540	ARROWHEAD BRASS PRODUCTS	1.02	5.10E-04

TABLE 3-3

2008, 2010 & 2015 Lead Emission Inventory for Piston Engine Aircrafts Los Angeles County (TPY)

Facility Identifier	Facility Site Name	2008 Lead Emissions TPY	2010 Lead Emissions TPY	2015 Lead Emissions TPY
VNY	Van Nuys	0.766	0.888	0.856
LGB	Long Beach / Daugherty Field	1.025	0.758	0.807
POC	Brackett Field	0.332	0.324	0.300
TOA	Torrance / Zamperini Field	0.580	0.300	0.302
SMO	Santa Monica Muni	0.326	0.290	0.294
EMT	El Monte	0.236	0.245	0.244
WHP	Whiteman	0.201	0.238	0.245
CPM	Compton / Woodley	0.165	0.184	0.184
HHR	Hawthorne / Jack Northrop Field	0.158	0.160	0.163
WJF	General Wm J Fox Airfield	0.160	0.157	0.153
LAX	Los Angeles International	0.110	0.141	0.162
BUR	Burbank-Glendale-Pasadena Airport	0.116	0.126	0.125
AVX	Catalina *	0.056	0.058	0.059
PMD	Palmdale Prodn Flt/Test	0.032	0.027	0.030
L11	Pebbly Beach *	0.012	0.012	0.012
L70	Agua Dulce Airpark *	0.007	0.007	0.007
0CL6	Bohunk's Airpark *	0.007	0.006	0.007
1CL1	Little Buttes Antique Airfield *	0.006	0.006	0.006
CL46	Quail Lake Sky Park *	0.006	0.006	0.006
64CL	Goodyear Blimp Base *	0.005	0.005	0.005
8CL0	Nichols Farms *	0.005	0.005	0.005
46CN	Crystal *	0.002	0.003	0.003
Total Piston Engine Aircraft Emissions		**4.31**	**3.95**	**3.98**

* Avg. 2010 Growth Ratio = 0.98636948
* Avg. 2015 Growth Ratio = 1.006049
* 2010 Emissions = 2008 Emissions * Avg. 2010 Growth Ratio
* 2015 Emissions = 2008 Emissions * Avg. 2015 Growth Ratio

For facilities with actual piston engine LTOs:

Emissions = (piston-engine LTO) * (7.7×10^{-6})

UNCERTAINTY IN THE INVENTORY

Over the years, significant improvements have been made to quantify emission sources upon which control measures are developed. Increased use of source tests has contributed to the improvement in point source inventories. Technical assistance to facilities and auditing of reported emissions by the AQMD also have improved the accuracy of the emissions inventory. However, fugitive emissions are believed to be a significant source of ambient lead concentrations in the Los Angeles County, and quantifying fugitive emissions is problematic, given the large uncertainties in quantifying fugitive emissions under either controlled or uncontrolled scenarios.

Mobile source inventories also remain a challenge due to the high number and types of equipment and engines involved, in-use performance variables, and complex emission characteristics. The latest approved models and planning assumptions were used in compiling the emissions inventory in this Chapter.

CHAPTER 4

LEAD CONTROL STRATEGY

Introduction
Overall Attainment Strategy
Existing Lead Emissions Control Regulations
AQMD's Existing Rules
AQMD's Proposed Lead Control Measure
Implementing Agency

INTRODUCTION

This chapter provides the overall control strategy in achieving emission reductions necessary for the attainment of the revised NAAQS for lead in the Los Angeles County portion of the Basin. Great strides have been made in lead control technologies and emission reduction programs, and attainment of the new lead NAAQS is achievable with the implementation of currently adopted AQMD rules. However, an additional control measure is proposed as part of this SIP to further ensure future attainment as demonstrated in Chapter 5.

This chapter presents the control measures for the lead NAAQS and associated emission reductions, where currently quantifiable. For additional information regarding baseline emission projections and air quality modeling, please refer to Chapter 3 as well as Chapter 5 and Appendix III, respectively.

OVERALL ATTAINMENT STRATEGY

Historically, the major source of lead air emissions has been motor vehicles such as cars and trucks. Motor vehicle emissions of lead have been dramatically reduced over the past forty years due to the phase-out of leaded gasoline, but lead is still used as an additive in general aviation gasoline used in piston-engine aircraft and remains a trace contaminant in other fuels. Substantial emission reductions have also been achieved due to enhanced controls in the metals processing industry. To achieve the revised lead ambient air quality standards and ensure continued attainment in Los Angeles County, implementation of current rules and a new rule amendment are necessary.

Sources of lead from stationary sources are mainly from larger industrial sources including but not limited to metals processing, particularly primary and secondary lead smelters. Emissions consist of those from lead point sources as well as fugitive lead dust emissions. Lead point source emissions are generally from the main exhaust of the battery breaking process, smelting furnaces, and refining kettles vented through a stack. Fugitive lead dust emissions are from facility roadways subject to wind, vehicular, or foot traffic, materials handling and storage areas, battery breaking areas, and smelting and refining areas. Lead can also be emitted from sources such as iron and steel foundries; primary and secondary copper smelters; industrial, commercial, and institutional boilers; waste incinerators; glass manufacturing; refineries, and cement manufacturing. Sources of lead from mobile sources are mainly from aviation gasoline utilized in general aviation aircraft with piston engines. These engines are generally used for instructional and recreational flying, air taxi activities, and personal transportation. Emissions of lead from piston-engine aircraft using leaded avgas comprise approximately half of the national inventory of lead emitted to air.

In May 2010, CARB recommended that the Los Angeles County portion of the South Coast Air Basin, excluding San Clemente and Santa Catalina Islands (Southern Los Angeles County), be designated as nonattainment for the 2008 lead NAAQS based on air quality data from 2007-2009. CARB's recommendation was based on data from Federal Reference Method (FRM) or Federal Equivalent Method (FEM) monitors. The 2008 NAAQS for lead requires that each state install and operate a network of ambient air lead monitors in order to determine attainment status with the standard. Two types of monitors are required; those that are non-source-oriented, and

those that are facility-based referred to as "source-oriented." CARB's lead designation recommendation was based on data from both sets of monitoring networks. Data values from measurements made at non-source-oriented monitors in the Basin were reviewed for years 2007 through 2009 and showed concentrations well below the new lead NAAQS. Ambient levels at non-source-oriented sites have consistently been an order of magnitude less that the new NAAQS for at least six years. Furthermore, the recent data at the source-oriented site at Van Nuys Airport also shows no potential to exceed the NAAQS. However, the source-oriented monitors near lead-acid battery recyclers showed exceedances of the new standard in 2005 at monitors for one facility, and from February 2008 through January 2010 at monitors for another facility.

The lead-acid battery recycling industry is the highest stationary source emitters of lead in Los Angeles County. Ambient measurements have shown that this industry is the only stationary source category that has the potential to cause nonattainment with the new lead NAAQS. There are currently two large lead-acid battery recyclers within Los Angeles County (the only two in the Western United States: Exide Technologies and Quemetco, Inc.) These facilities receive spent (used) lead-acid batteries and other lead-bearing materials and recycle them, recovering the lead. Lead is recycled because of its value and the reduction of toxic waste, and is primarily used to manufacture new batteries. Approximately 98 percent of lead acid batteries in the United States are recycled, and all components of the batteries, primarily lead, plastic, and acid, are recycled, Through the recycling process, approximately 95 percent of the lead in the batteries is recovered.

Given that the ambient lead concentrations at non-source-oriented sites and at the Van Nuys Airport site show very low levels relative to the new lead NAAQS, and that the only ambient levels exceeding or even approaching the new lead NAAQS are at the sites near the lead-acid battery recyclers, the lead attainment strategy is exclusively focused on directly-emitted lead from stationary sources. Further controls on mobile sources are not needed.

EXISTING LEAD EMISSIONS CONTROL REGULATIONS

The following provides a chronology of existing lead control regulations:

- In November 1970, CARB set the state ambient air quality standard for lead at 1.5 $\mu g/m^3$ averaged over 30 days.
- In October 1978, EPA promulgated primary and secondary NAAQS for lead under section 109 of the Act (43 FR 46246). Both primary and secondary standards were set at a level of 1.5 $\mu g/m^3$ averaged over a calendar quarter.
- In 1987, the California legislature adopted the Air Toxics "Hot Spots" Information and Assessment Act. The goals of the Act are to collect emissions data of toxic air contaminants, identify facilities having localized impacts, to determine health risks, and to notify affected individuals. Facilities with high health risks must reduce their risks to the community by incorporating risk reduction plans.
- In December 1990, AQMD adopted Rule 1401 – New Source Review of Toxic Air Contaminants. The rule applies to new, relocated, and modified permit units with TAC

emissions. Lead was added to the Rule 1401 list of TACs in 1992. The rule denies granting permits to construct a new, relocated or modified permit unit if emissions of any TACs create a maximum individual cancer risk (MICR) of greater than one in one million at any receptor location unless the permit unit is constructed with Best Available Control Technology for Toxics (T-BACT). If the unit has T-BACT, MICR of ten in one million is allowed.

- In September 1992, AQMD adopted Rule 1420 – Emissions Standard for Lead. The rule incorporated the state ambient air quality standard 1.5 $\mu g/m^3$ averaged over a 30-day period and required control devices on lead emission points, control efficiency requirements for lead control devices, housekeeping, and monitoring or modeling of ambient air quality.
- In January 1993, CARB adopted the Airborne Toxic Control Measure (ATCM) for Emissions of TAC Metals from Non-Ferrous Metal Melting. The state regulation required control devices for lead and other toxic metal emission points, control efficiency requirements for control devices, fugitive emission control, and recordkeeping.
- In April 1994, AQMD adopted Rule 1402 – Control of Toxic Air Contaminants from Existing Sources. The purpose of this rule is to reduce the health risk associated with emissions of TACs from existing sources by specifying health limits for cancer and non-cancer compounds applicable to total facility emissions and by requiring facilities to implement risk reduction plans to achieve specified risk limits, as required by the AB2588 "Hot Spots" Program and this rule.
- In June 1997, EPA adopted the National Emissions Standards for Hazardous Air Pollutants (NESHAP) from Secondary Lead Smelting. The federal regulation required lead emission concentration limits of lead control devices, control of process fugitive emissions, monitoring, recordkeeping, and reporting.
- In October 2008, EPA amended the NAAQS for lead from 1.5 $\mu g/m^3$ to 0.15 $\mu g/m^3$ requiring attainment by December 31, 2015, using a rolling 3-month average evaluated over three year period.
- In November 2010, AQMD adopted Rule 1420.1 – Emissions Standard for Lead from Large Lead-Acid Battery Recycling Facilities. The purpose of this rule is to protect public health and to help ensure attainment with the amended lead NAAQS.

AQMD'S EXISTING RULES

The 2008 lead NAAQS requires full attainment of the revised federal lead standards no later than December 31, 2015. The lead-acid battery recycling industry has been determined by AQMD staff to be the highest stationary source emitters of lead in Los Angeles County, and the only known stationary source category that causes or has the potential to cause exceedances of the new lead NAAQS.

The AQMD's control strategy for this source category is based on the following approaches: 1) permit conditions; 2) core rule requirements with contingency compliance plans; 3) process changes; 4) good management practices and housekeeping requirements; and 5) more stringent monitoring requirements.

Over the past several years, both facilities (Exide and Quemetco) have been the subject of several actions resulting from violations of AQMD rules, including exceeding ambient lead limits at fence-line monitors. Violations have led to modifications of facility compliance plans, new permit conditions, and in some cases, additional conditions under orders of abatement. Many of the conditions have included additional housekeeping requirements, process changes, and more frequent monitoring at more locations. The exceedances of Rule 1420 ambient lead limits, along with the promulgation of the more stringent lead NAAQS by EPA, also led to the adoption of AQMD Rule 1420.1 in 2010, applicable specifically to the two large lead-acid battery recycling facilities. In addition to air quality regulations, these two facilities are subject to other toxics requirements under the California Department of Toxic Substances Control (DTSC).

Lead-acid battery recycling facilities are secondary lead smelting operations where spent lead-acid batteries, mostly automotive, and other lead-bearing materials are received from various sources and processed to recover lead, plastics, and acids. The process mainly involves the sorting, crushing, melting, and refining of lead-acid batteries, which ultimately produces lead ingots that are then sold to other entities. Several types of controls for lead emissions are currently used at the lead-acid battery recycling facilities in the Basin. Lead emissions at lead-acid battery recycling facilities are generally categorized as point and fugitive lead emissions. Point source emissions are those emissions that are vented to a stack where the stack can be from a specific piece of equipment such as a furnace, building, or air pollution control device. Fugitive emissions are particulate matter that contain lead, are not vented through a stack or control device that can become airborne from anywhere in the facility, including dust. Fugitive lead-dust at lead-acid battery recycling facilities can be a major source of lead emissions. Fugitive lead-dust deposits and accumulates in and around process areas, from lead point sources, on roof tops, in and around a facility, and during maintenance operations. There are a variety of housekeeping and management practices that can be implemented to minimize fugitive lead dust. Housekeeping activities must be implemented frequently and properly to ensure they are effective. The concept behind many of these strategies is to either stabilize, contain, or remove lead dust so it cannot become airborne. Housekeeping practices specifying adequate frequencies and locations for all cleaning actions to be performed are also critical in the effectiveness to control fugitive lead-dust emissions.

Currently, emissions of lead from stationary sources, including lead-acid battery recycling facilities, are regulated by AQMD Rule 1420 – Emissions Standard for Lead, and AQMD Rule 1420.1 – Emissions Standard for Lead from Large Lead-Acid Battery Recycling Facilities.

Rule 1420 was adopted in August 1992 and controls emissions of lead from stationary sources which use or process lead-containing materials. The rule was adopted to help ensure that facilities would not discharge emissions which would cause ambient air concentrations of lead to exceed the 1978 federal and state ambient air quality standards for lead of 1.5 $\mu g/m^3$.

Rule 1420.1 was adopted on November 5, 2010 and controls emissions of lead from large lead-acid battery recycling facilities which are the highest stationary source emitters of lead in Los Angeles County. The rule was adopted to address the amended NAAQS for lead to ensure the Los Angeles County can achieve the revised lead ambient air quality standard of 0.15 $\mu g/m^3$.

Rule 1420 – Emissions Standards for Lead

AQMD Rule 1420 was adopted in September 1992 and has not been amended since its adoption. The full text of the Rule is included in Appendix II. The rule applies to facilities that process or use lead-containing materials which includes, but is not limited to, primary or secondary lead smelters, foundries, lead-acid battery manufacturers or recyclers, and lead-oxide, brass and bronze producers. Rule 1420 is based on the state ambient air quality standard for lead of 1.5 $\mu g/m^3$ averaged over a 30-day period, and it ensures that the standard is met through requirements for emission control systems, monitoring, sampling, recordkeeping, reporting, and good housekeeping practices.

Rule 1420 requires facilities that process more than two tons of lead per year to submit a Compliance Plan. Historically, Rule 1420 Compliance Plans have included requirements for monitoring, air dispersion modeling, and installation and implementation of point source controls.

Under Rule 1420, both Exide and Quemetco are required to maintain and operate two fence line monitors to collect samples to demonstrate compliance with the Rule 1420 ambient lead standard of 1.5 $\mu g/m^3$. Each facility currently operates an ambient fence-line air monitoring and sampling network. The fence-line monitors are installed at locations that are based on the maximum expected ground-level concentrations of lead at or beyond the facility's property line. (See Chapter 2 for the location of Exide's and Quemetco's fence-line monitors.)

Since the AQMD's source-oriented monitors have shown that these two facilities have the potential to exceed the new federal lead ambient air quality standard of 0.15 $\mu g/m^3$, the AQMD Governing Board adopted Rule 1420.1 in November 2010. This Rule applies to large lead-acid battery recycling facilities that process more than 50,000 tons of lead a year. The provisions of Rule 1420.1 are more stringent and are in addition to the requirements of Rule 1420.

Rule 1420.1 – Emissions Standards for Lead from Large Lead-Acid Battery Recycling Facilities

Rule 1420.1 was adopted in November 2010 and is designed to address lead emissions from large lead-acid battery recycling facilities in order to help achieve attainment with the 0.15 $\mu g/m^3$ standard. The full text of the Rule is included in Appendix II.

Rule 1420.1 incorporated in regulation many of the provisions and requirements that were being implemented via compliance plans and orders of abatement at Exide Technologies, and included additional safeguards to help ensure that the Los Angeles County will achieve the 2008 NAAQS for lead. The rule establishes facility-wide and individual point source maximum allowable emission rates, and requires secondary lead control devices on dryers. Fugitive lead emissions are addressed through housekeeping and maintenance activity requirements, and total enclosures, vented to control devices, of all areas where lead is being processed and where maintenance activities are occurring. The rule also sets ambient standards for airborne lead concentrations at monitors around the facility, and requires more facility-operated monitors (a minimum of four) that collect samples on a more frequent schedule (once every three days). Additional, source testing, recordkeeping, and reporting requirements are included to ensure continuous

compliance. The rule also includes provision for the submittal of new compliance plans and emission reduction feasibility studies if ambient levels reach 80% (0.12 $\mu g/m^3$) of the rule limit. The following provides a detailed and description of Rule 1420.1 requirements.

- ***Ambient Air Lead Concentrations:*** Beginning January 1, 2012, large lead-acid battery recycling facilities subject to Rule 1420.1 will not be allowed to discharge into the atmosphere emissions which contribute to ambient air concentrations of lead that exceed 0.15 $\mu g/m^3$ averaged over any 30 consecutive days. The averaging time for Rule 1420.1 is shorter than that of the lead NAAQS (rolling three-month average of monthly averages) with a more frequent sampling requirement of one sample in three days versus the NAAQS which requires one sample in six days. In addition, the compliance date of Rule 1420.1 is January 1, 2012 vs. December 31, 2015 for the lead NAAQS.
- ***Total Enclosures:*** Under Rule 1420.1, all areas used in the lead-acid battery recycling operation for processing or storage of lead-containing material, and all areas where maintenance is being performed, are required to install total enclosures vented to a lead control device. The areas may be enclosed individually or in groups. This requirement provides maximum containment and will minimize fugitive lead-dust emissions generated in areas where processing, handling and storage of lead-containing materials occur. Rule 1420.1 also establishes requirements for monitoring and maintaining negative pressure and in-draft velocity at the openings of these enclosed areas. Facilities are required to complete construction of all necessary equipment for total enclosures by July 1, 2011.
- ***Lead Point Source Emission Controls:*** All lead emissions from lead point sources are required to be vented to an emissions collection system that ducts the entire gas stream to a lead control device. The effective date for lead point source emission control requirements is July 1, 2011. The total facility mass lead emission rate for all lead point sources shall not exceed 0.045 pounds of lead per hour, with a maximum emission rate for any single lead point source not to exceed 0.010 pounds of lead per hour. The total facility and maximum emission rates shall be determined using the most recent source tests conducted by the facility or the AQMD. The maximum emission rates of 0.045 and 0.010 lb/hr were established to adequately provide a protective limit for exposure to lead emissions and achieve the ambient standard of 0.15 $\mu g/m^3$.
- ***Housekeeping Requirements:*** More stringent housekeeping practices should be conducted to minimize fugitive lead-dust emissions. The housekeeping requirements include prescribed requirements for cleaning frequencies of specific areas; maintenance activity; encapsulation of all facility grounds, removal of weather caps on any lead emissions source stacks; building structural integrity inspections; storage and transport of lead-containing materials; onsite mobile vacuum sweeping; and surface impoundment pond or reservoir cleanings.
- ***Annual Source Testing:*** Rule 1420.1 requires annual source tests for all lead control devices in order to demonstrate compliance with the facility total lead mass emission rate standard of 0.045 lb/hr, and the maximum individual stack lead emission rate standard of 0.01 lb/hr. If the most recent source test for a lead point source demonstrates emissions of 0.0025 lb/hr or less, the facility may alternatively elect to conduct the next source test for that device within 24 months.

- ***Ambient Air Monitoring and Sampling Requirements:*** Under Rule 1420.1, each facility will be required to collect and analyze ambient air lead samples to determine compliance with the ambient air quality lead concentration standard of Rule 1420.1. The rule requires a minimum of four monitors at facility locations approved by AQMD. Federal regulations require only one source-oriented monitor at all facilities emitting more than 0.5 tons of lead per year. Rule 1420.1 requires facilities to collect samples at least once every three days, more frequent than the federal requirement of once every six days. Under Rule 1420.1, on and after January 1, 2012, facilities that exceed an ambient air lead concentration of 0.15 $\mu g/m^3$ averaged over any 30 consecutive days, measured at any fence line monitor, will be in violation of the rule and be required to increase ambient air monitoring and sampling to a daily frequency. Daily monitoring and sampling will be required to be conducted for a period of 60 consecutive days at each sampling site that measured an exceedance until no 30-day average exceedances are recorded. In addition, according to Rule 1420.1, sampling sites at the property line may be located just inside the fence line on facility property if logistical constraints preclude placement outside the fence line. As a result, monitors required under Rule 1420.1 will be located closer to fugitive lead sources, in most cases, when compared to monitors required by federal monitoring requirements which must be in publicly accessible areas. Along with the shorter averaging time described previously, all of the ambient air monitoring and sampling requirements of Rule 1420.1 are more stringent than the federal requirements, such that potential Rule 1420.1 violations will likely occur before exceedances of the lead NAAQS.
- ***Recordkeeping and Reporting Requirements:*** Rule 1420.1 requires recordkeeping and reporting, including public notifications, for specific maintenance activity, turnarounds and shutdowns for all lead-containing materials processed at the facility. Records for all housekeeping, maintenance activity, ambient air lead monitoring, lead control device inspection and maintenance, and unplanned shutdowns of any smelting furnaces must be maintained. Facilities are required to submit reports for monthly ambient air monitoring results for lead and wind data measured at each sampling location on a monthly basis. Rule 1420.1 also requires notifications of planned and unplanned shutdowns, and turnarounds.
- ***Core Requirements with a "Contingency" Compliance Plan:*** Rule 1420.1 establishes the core requirements for lead emissions sources described above, with the additional provision of a "Contingency" Compliance Plan. Establishing core requirements in the rule provides regulatory certainty for affected facilities of the key required controls core requirements for lead point sources are based on both facility-wide and individual emission rates for the facility's lead point sources, as well as source testing requirements. Core requirements for fugitive lead sources include total enclosures, comprehensive housekeeping and maintenance activities, and ambient monitoring and limits that capture fugitive as well as point source emissions. As an additional safeguard against the facilities exceeding ambient NAAQS or Rule 1420.1 limits, the preparation and submittal of a "Contingency" Compliance Plan is triggered if the facility approaches the lead ambient air quality standard with a 30-day rolling average of 0.12 ug/m^3. The Compliance Plan would be implemented if the facility exceeded the Rule 1420.1 ambient lead standard of 0.15 ug/m^3. The Compliance Plan provision serves as a contingency to ensure that measures can be identified prior to exceeding the 0.15 ug/m^3 standard and are ready for fast implementation if the 0.15 ug/m^3 standard is exceeded.

- ***Compliance Plan:*** The most important provision of Rule 1420.1 is the limit on ambient concentrations of lead at fence line monitors. Given the difficulty in quantifying fugitive lead emissions, and given the known importance of fugitive emissions at lead-acid battery recycling facilities, the ambient monitors provide the most effective means of ensuring compliance with the NAAQS since they capture all emissions. The Compliance Plan allows for rapid deployment of additional controls on fugitive or other sources if a facility approaches the ambient lead standard even after all core requirements of Rule 1420.1 have been implemented. Beginning July 1, 2011, any facility that exceeds an ambient air lead concentration of 0.12 $\mu g/m^3$ averaged over any 30 consecutive days is required to submit a Compliance Plan that identifies additional lead emission reduction measures to ensure that the ambient air quality concentration of 0.15 $\mu g/m^3$ is not exceeded. An exceedance of the Rule 1420.1 lead standard averaged over any 30 consecutive days will constitute a violation, as well as triggering implementation of the Compliance Plan.

AQMD'S PROPOSED LEAD CONTROL MEASURE

A proposed control measure is to amend AQMD Rule 1420 – Emissions Standard for Lead. Rule 1420 applies to all non-vehicular sources of lead emissions and contains requirements for emission levels, controls, housekeeping, and monitoring. In addition, sources must comply with an ambient air quality lead standard of 1.5 $\mu g/m^3$, averaged over 30 days. The amendment will lower the ambient limit in Rule 1420 to 0.15 $\mu g/m^3$ to correspond to the revised NAAQS for lead of 0.15 $\mu g/m^3$. The more stringent, shorter averaging time of a 30 day rolling average will be retained. In addition, language will be added to Rule 1420 to clarify New Source Review (NSR) requirements for stationary lead sources, consistent with AQMD's current NSR regulation (Regulation XIII) and federal NSR requirements. Amendments to Rule 1420 are scheduled for the 4th quarter of 2012.

California Environmental Quality Act (CEQA) Analysis

Staff has reviewed the proposed 2012 Lead State Implementation Plan (SIP) for Los Angeles County, pursuant to CEQA Guidelines §15002(k) - Three Step Process. If the project is not exempt, the lead agency takes the second step and prepares an Initial Study (IS) (CEQA Guidelines §15002(k)(2)). AQMD staff has prepared an IS, which demonstrates the following. The only new proposed control measure in the 2012 Lead SIP would amend Rule 1420 to lower the ambient lead standard from 1.5 to 0.15 ug/m3, consistent with Rule 1420.1. Since the most current monthly lead monitoring data in the Los Angeles County at facilities subject to Rule 1420, but not subject to Rule 1420.1, show that average lead concentrations are less than 0.15 ug/m3, the proposed control measure is not expected to result in any changes at existing affected facilities. In the event that monitoring near or at a lead facility exceeds 0.15 ug/m3, the proposed control measure may require implementing lead control requirements similar to those in Rule 1420.1, resulting in environmental impacts that are essentially the same as those identified in the October 2010 Final Environmental Assessment (EA) for Rule 1420.1 (AQMD No. 100331JK, SCH No. 2010041086). In addition, based on the IS, AQMD has determined that the 2010 Rule 1420.1 Final EA adequately describes the three requisite criteria specified in CEQA Guidelines

Section 15153(b)(1)(A-C) As a result, staff intends to use the previously approved October 2010 Final EA as the CEQA document for the 2012 Lead SIP pursuant to CEQA Guidelines §15153.

Staff will provide the notice required by Guidelines Section 15153(b)(2). As required by that section, the key issues are whether this EIR should be used for this project and whether there are any additional, reasonable alternatives or mitigation measures that should be considered as ways of avoiding or reducing any significant impacts of the project. Pursuant to CEQA Guidelines §15153(b)(2), the October 2010 Final EA for Rule 1420.1 will be available to the public for a 30-day public comment period.

Socioeconomic Impacts & Cost Effectiveness Analysis

Since no existing sources are expected to be affected by the proposed amendments to Rule 1420, no cost assumptions were made and no socioeconomic impact analysis was made. AQMD staff assesses socioeconomic impacts of proposed rule amendments or proposed rules pursuant to the Board resolutions and state legislative requirements, but there is no specific requirement for this SIP submittal.

As additional information on control requirements becomes more well-defined during the rulemaking process, a detailed assessment of their socioeconomic and environmental impacts will be conducted.

IMPLEMENTING AGENCY

The AQMD has the authority to adopt and enforce rules and regulations to achieve and maintain the NAAQS under H&SC Section 40460 and 40440(a). For lead NAAQS, the AQMD is responsible for implementing stationary source control measures.

CHAPTER 5

FUTURE AMBIENT LEAD CONCENTRATIONS

Introduction
Modeling Approach
Model Results by Facility
Fugitive Emissions

INTRODUCTION

This chapter provides a description of the atmospheric dispersion modeling performed to predict future ambient lead concentrations and demonstrate attainment of the NAAQS in the vicinity of the two major lead sources in the Los Angeles County.

For additional information regarding the actual input and output files, please refer to Appendix III.

MODELING APPROACH

The new federal lead NAAQS regulation requires states to employ atmospheric dispersion modeling to demonstrate attainment in the vicinity of major point sources of lead: primary lead smelters, secondary lead smelters, primary copper smelters, lead gasoline additive plants, lead-acid storage battery manufacturing plants that produce 2,000 or more batteries per day. Dispersion modeling was performed following the procedures outlined in EPA's latest guidance document entitled "Guideline on Air Quality Models".

The two large lead-acid battery recycling facilities (Exide and Quemetco) were modeled to determine the monthly lead concentration for base year 2010 and for future years after 2012. As shown in Chapter 2, these are the only two lead sources in the Los Angeles County with the potential to cause exceedances of the new lead NAAQS. All facility boundary information, source parameters, and emission rates were obtained from the most recently submitted health risk assessment (HRA) for each facility.

The American Meteorological Society/Environmental Protection Agency Regulatory Model Improvement Committee (AERMIC) was formed to introduce state-of-the-art modeling concepts into the EPA's air quality models. Through AERMIC, a modeling system, AERMOD, was introduced that incorporated air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources, and both simple and complex terrain. As of December 9, 2006, the EPA promulgated the AERMOD modeling system as a replacement for the Industrial Source Complex (ISC) Model as the recommended dispersion model. The AERMOD modeling system consists of the following components which were utilized: AERMET, a meteorological data preprocessor that incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts; AERMAP, a terrain data preprocessor that incorporates complex terrain using U.S. Geologic Survey (USGS) Digital Elevation Data; AERSURFACE, a surface characteristics preprocessor; and BPIPPRIME, a multi-building dimensions program incorporating the good engineering practice technical procedures for PRIME applications.

Dispersion modeling for each facility was performed using AERMOD (version 11353) to determine the monthly lead concentrations for base year 2010 and future years beyond 2010. The AERMOD default regulatory option was used and building downwash, calculated using BPIPPRIME, was included. AERSURFACE was used to determine the surface albedo and surface roughness. A Bowen ratio of 1.0 was used, instead of the AERSURFACE output value. This was done because the National Land Cover Data (NLCD) 92 dataset does not include the

recent land development projects that occurred within Southern California, which would result in a lower Bowen ratio. According to Section 8.3.1.2 of Appendix W, five years of representative meteorological data should be used when estimating concentrations with an air quality model. Therefore, AERMET (version 11059) was used to develop the necessary 5-year meteorological data set for each facility using the meteorological data from the appropriate monitoring station and upper air sounding data collected at the Miramar Naval Air Station. For Exide, the Central LA monitoring station was used. However, only 4 years of meteorological data is available for this station (2006 to 2009). For Quemetco, the La Habra monitoring station was used and all 5 years (2005 to 2009) of meteorological data is available. AERMAP (version 11103) was used to determine the terrain base elevations for each receptor and source and a hill height scale value for each receptor. A 50-meter by 50-meter receptor grid centered on the facility was used, as well as fence-line receptors placed using 25-meter intervals. Receptors within the facility's property boundaries were removed.

At this time, AERMOD does not have the capability to calculate design values for the lead NAAQS therefore, the EPA's post processor, LEADPOST, was used to calculate the rolling cumulative (all sources) 3-month average concentration at each modeled receptor with source group contributions and the maximum cumulative (all sources) rolling 3-month average concentration by receptor

For 2010, the stack emissions from the facility's 2010 AQMD AER program were modeled.

For the future years after January 1, 2012, the emission rates were calculated from the emissions limits contained in Rule 1420.1. Rule 1420.1 is designed to address lead emissions from large lead-acid battery recycling industry in order to achieve attainment with the 0.15 $\mu g/m^3$ standard no later than December 31, 2015. More information on Rule 1420.1 can be found in Chapter 4. Beginning January 1, 2012, large lead-acid battery recycling facilities subject to Rule 1420.1 will not be allowed to discharge into the atmosphere emissions which contribute to ambient air concentrations of lead that exceed 0.15 $\mu g/m^3$ averaged over any 30 consecutive days. Rule 1420.1 requires annual source tests for all lead control devices in order to demonstrate compliance with the facility total lead mass emission limit of 0.045 lb/hr, and the maximum individual stack lead emission rate standard of 0.01 lb/hr. As such, the facility total emission limit of 0.045 lb/hr was evenly distributed among all the stacks at each facility, ensuring that no individual stack exceeded the 0.01 lb/hr per stack limit.
Fugitive dust emissions that may contain lead were excluded from the dispersion modeling analysis. Accurately modeling fugitive dust emissions is problematic, given the very large uncertainties in magnitude, location, timing, and lead content of dust. As stated in previous chapters, fugitive lead emissions are believed to be a major source of lead to the atmosphere at these two facilities. Therefore, fugitive lead emissions are most appropriately addressed by the ambient monitoring requirements of Rule 1420.1, which will capture both fugitive and point source emissions subject to an ambient limit.

To comply with the EPA's modeling requirement, a background concentration of 0.01 $\mu g/m^3$ obtained from the latest monitoring data was added to all the modeling results.

MODEL RESULTS BY FACILITY

EXIDE

Using the 2010 AER emissions, the maximum 3-month rolling average lead concentration is 0.141 μg/m^3. Using the Rule 1420.1 emission limits for future year emissions, the maximum 3-month rolling average lead concentration is 0.115 μg/m^3. The results are summarized in Table 5-1 and shown in Figure 5-1.

QUEMETCO

Using the 2010 AER emissions, the maximum 3-month rolling average lead concentration is 0.012 μg/m^3. Using the Rule 1420.1 emission limits for future year emissions, the maximum 3-month rolling average lead concentration is 0.083 μg/m^3. It is important to note that although the future year's modeled lead concentrations for Quemetco are higher than for 2010, this does not mean that the impacts from Quemetco are expected to increase. The future year's impacts are based on the emission limits contained in Rule 1420.1, which are higher than Quemetco's current emissions. The results are summarized in Table 5-1 and shown in Figure 5-1.

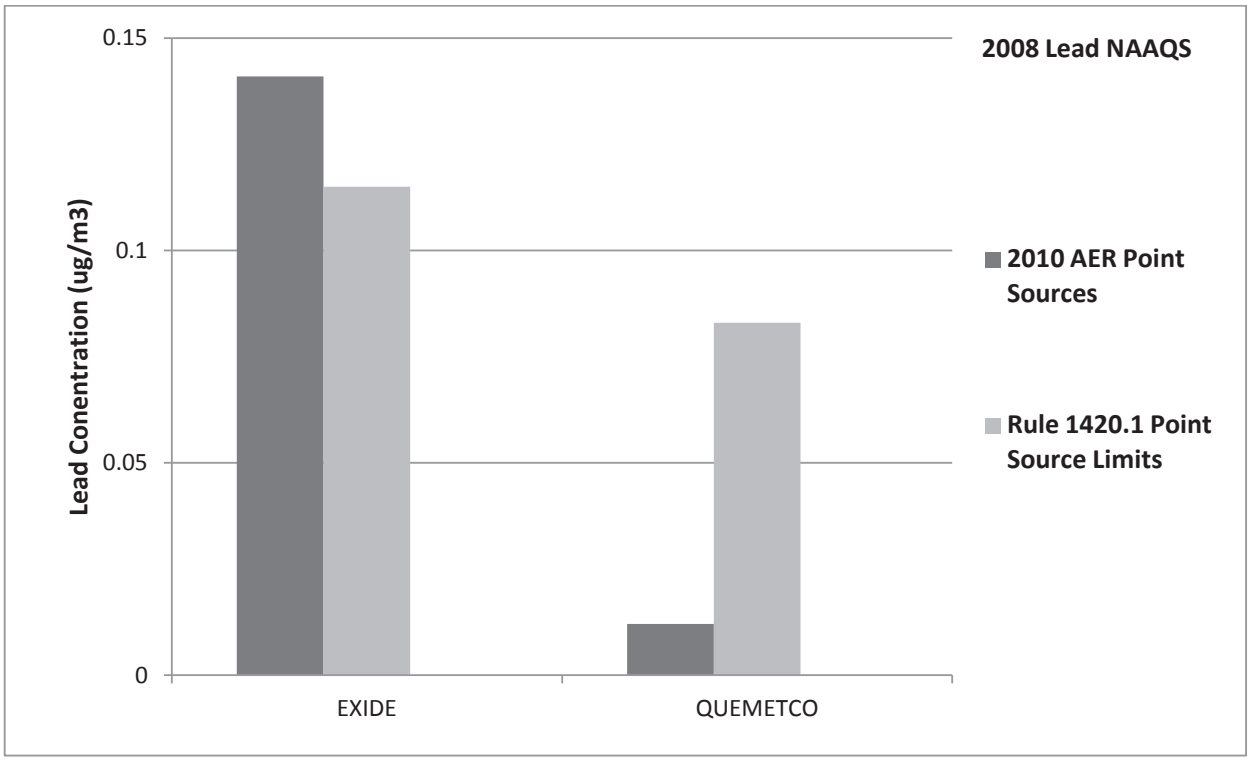
TABLE 5-1

Summary of Dispersion Model Results by Facility

	2010 AER Emissions	Rule 1420.1 Emission Limits
Exide	0.141 μg/m^3	0.115 μg/m^3
Quemetco	0.012 μg/m^3	0.083 μg/m^3

FIGURE 5-1

Summary of Dispersion Model Results by Facility



Figures showing modeled concentration isopleths for each facility are included in Appendix III.

FUGITIVE EMISSIONS

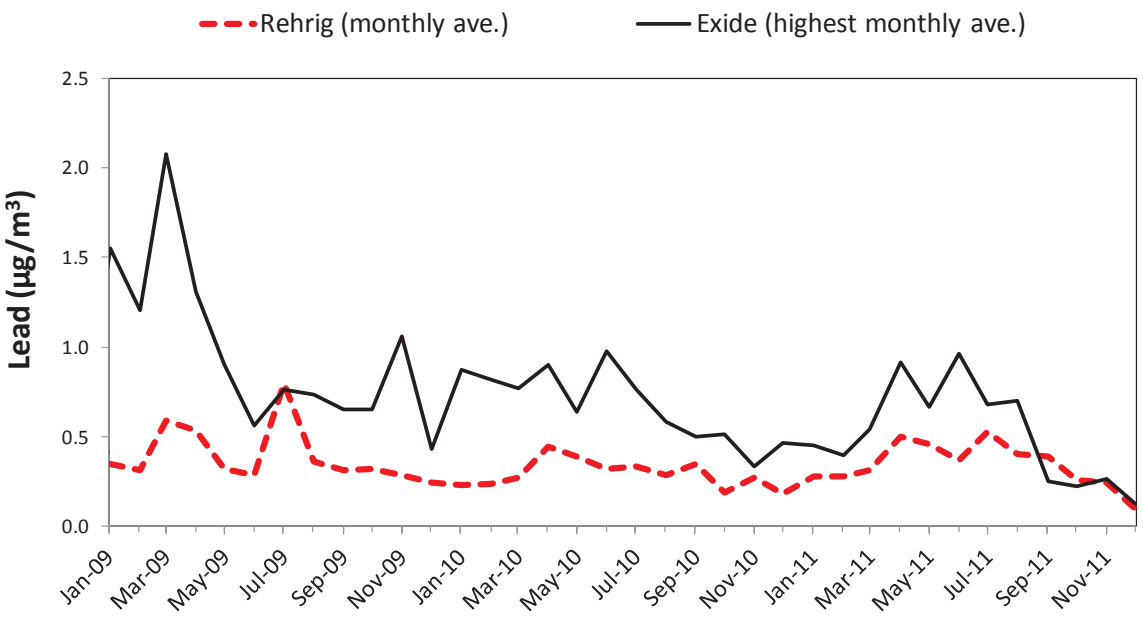
As previously stated, the modeling results above do not include the influence of fugitive emissions, although fugitive emissions are believed to be a significant source of ambient lead in the vicinity of these two facilities. The modeling results in Table 5-1 for Rule 1420.1 emission limits provide a margin of safety below the three-month rolling average federal NAAQS for lead that allows for the influence of fugitive emissions while still not causing an exceedance.

Furthermore, the Rule 1420.1 monitoring provisions, which include the influence from fugitive as well as point sources, will ensure attainment of the NAAQS given that the Rule 1420.1 monitoring requirements and limits are more stringent than the federal NAAQS. The averaging time is a rolling 30-day average rather than a rolling three month average of monthly averages. At least four monitoring locations are required rather than the single monitor per facility required in the federal regulations. These monitors, placed to capture maximum impacts, are generally located closer to the facility since they are allowed to be just inside the fence-line. Federally required monitors must be off facility property to meet the definition of ambient air, and thus are farther from the facility and are often subject to logistical constraints that preclude locating at

maximum impact locations. The minimum monitoring frequency in Rule 1420.1 is one day in three, more frequent than the federal one day in six requirements. Taken together, the monitoring provisions of Rule 1420.1 were designed such that a facility would be in violation of the Rule before causing an exceedance of the federal lead NAAQS. As a result, the facility will be required to take steps to avoid future violations of Rule 1420.1, thus avoiding any violations of the lead NAAQS. This protection against NAAQS exceedances is illustrated in Figure 5-2 which depicts the relationship between the AQMD-operated, NAAQS comparable, source-oriented site near Exide at Rehrig, and the sites operated by Exide pursuant to Rule 1420.1. The monthly averages at Rehrig are generally lower than the highest monthly average measured at the Rule 1420.1 sites. Note that Figure 5-2 shows monthly averages, while the federal NAAQS is in the form of a three month average. Also note that according to Rule 1420.1, a 30-day average above 0.15 $\mu g/m^3$ at any site near the facility would cause a violation of the rule. So a 30-day exceedance at the Rehrig site would lead to a violation of Rule 1420.1, and require measures to reduce lead emissions well before a three-month average exceedance of the federal NAAQS at the same location.

FIGURE 5-2

Highest monthly average lead concentrations measured near the Exide facility in Vernon. The dashed red line represents average monthly lead levels recorded by AQMD at the Rehrig source-oriented site. The solid black line indicates the highest monthly average lead concentrations measured by the Exide facility pursuant to Rule 1420.1 at their monitoring locations (i.e. AT&SF, SE, SW, New NW, New NE, New N, and MID)



CHAPTER 6

CLEAN AIR ACT REQUIRMENTS

Introduction
Federal Clean Air Act Requirements
Specific Lead Planning Requirements
Nonattainment New Source Review (NSR) Program
Contingency Measures
Reasonable Further Progress (RFP)
Reasonably Available Control Measures (RACM) and Reasonably Available Control Technology (RACT) Requirements

INTRODUCTION

The purpose of this chapter is to demonstrate this lead SIP meets all submittal requirements in the CAA as well as the new federal lead regulation (73 FR 66964). Note that CAA Section 172(c)(8) (42 U.S.C. §7502(c)(8)) provides as follows:

Upon application by any state, the Administrator may allow the use of equivalent modeling, emission inventory, and planning procedures, unless the Administrator determines that the proposed techniques are, in the aggregate, less effective than the methods specified by the Administrator.

The new lead NAAQS is unique in that attainment must be demonstrated at source-oriented monitors, and thus the attainment demonstration must address specific facilities that may cause NAAQS exceedances. The attainment demonstration presented in Chapter 5 employs a combination of emissions reductions as well as an ambient monitoring program that is more stringent than the federal monitoring requirements. These techniques should be more effective at ensuring NAAQS lead attainment than traditional procedures that rely on future emissions reductions alone.

FEDERAL CLEAN AIR ACT REQUIREMENTS

In November 1990, Congress enacted a series of amendments to the CAA intended to intensify air pollution control efforts across the nation. One of the primary goals of the 1990 CAA Amendments was an overhaul of the planning provisions for those areas not currently meeting NAAQS. The CAA identifies specific emission reduction goals, requires both a demonstration of reasonable further progress and an attainment demonstration, and incorporates more stringent sanctions for failure to attain or to meet interim milestones. There are several sets of general planning requirements, both for nonattainment areas [Section 172(c)] and for implementation plans in general [Section 110(a)(2)]. These requirements are listed and briefly described in Chapter 1 (Tables 1-2 and 1-3). The general provisions apply to all applicable pollutants unless superseded by pollutant-specific requirements. The following sections discuss the federal CAA requirements for lead.

SPECIFIC LEAD PLANNING REQUIREMENTS

The EPA promulgated the initial lead standard of 1.5 $\mu g/m^3$ in 1978, and revised it on October 15, 2008 to a level of 0.15 $\mu g/m^3$. On December 31, 2010, the EPA designated the Los Angeles County portion of the Basin, excluding San Clemente and Santa Catalina Islands, as nonattainment for the 2008 lead NAAQS. The CAA requires areas classified as nonattainment to attain the lead standard as expeditiously as practicable and within the CAA's deadlines, which in AQMD's case is no later than December 31, 2015. The requirements specifically addressed for the lead SIP are:

- Nonattainment New Source Review (NSR) Program;
- Contingency Measures;

- Reasonable Further Progress (RFP);
- Reasonably Available Control Measures (RACM); and
- Reasonably Available Control Technology (RACT)

NONATTAINMENT NEW SOURCE REVIEW (NSR) PROGRAM

The nonattainment New Source Review (NSR) program applies when a major source of a criteria pollutant that is located in an area that is designated as nonattainment for that pollutant is constructed or undergoes a major modification. The major source threshold for lead under the nonattainment NSR program is 100 TPY for all source categories.[1] Accordingly, the nonattainment NSR program for lead applies when any major source of lead located in an area designated nonattainment for lead is constructed, or undergoes a major modification. A major modification is a project at a major stationary source that results in a significant emissions increase and a significant net emissions increase, where "significant" for lead emissions is defined as 0.6 TPY. Nonattainment NSR requirements include but are not limited to:

- Installation of Lowest Achievable Emissions Rate (LAER) control technology;
- Offsetting new emissions with creditable emissions reductions;
- A certification that all major sources owned and operated in the state by the same owner are in compliance with all applicable requirements under the CAA;
- An alternatives analysis demonstrating that the benefits of the proposed source significantly outweigh the environmental and social costs imposed as a result of its location, construction, or modification; and
- Public comment on a permit.

NSR for point sources of lead is presently addressed through the AQMD's NSR program (Regulation XIII) which provides adequate guidance to fully implement the revised lead NAAQS. The AQMD's NSR program includes provisions requiring permits for the construction and operation of new or modified stationary sources anywhere in the lead nonattainment area, and is sufficiently complete and stringent "to assure that the NAAQS is achieved".

Due to the persistent nature of lead and the potential for lead particle accumulation over time, Rule 1420.1 has additional requirements for new large lead-acid recycling facilities. Under Rule 1420.1, any new battery recycling facility that begins construction or operations shall not be located in an area that is zoned for residential or mixed use, and shall not be located within 1,000 feet from the property line of a sensitive receptor, a school under construction, park, or any area that is zoned for residential or mixed use. A siting provision for new battery recycling facilities is also included to avoid the possibility of high lead exposure for nearby residences and sensitive receptors from any new lead-acid battery recycling facility.

[1] Environmental Protection Agency, "National Ambient Air Quality Standards for Lead; Final Rule," 40 CFR Part 51.166, November 2008.

In addition, language will be added to the proposed amendments to AQMD Rule 1420 to clarify lead NSR requirements for stationary sources, consistent with AQMD's Regulation XIII and federal NSR requirements.

CONTINGENCY MEASURES

The federal CAA requires lead contingency measures to be implemented in the event of failure to meet milestone emission reduction targets and/or failure to attain the lead standard by the attainment date of 2015. If inadequate progress is made in meeting the interim emission reduction goals or failing to meet attainment, the AQMD must take action to bring forward measures that are scheduled for later adoption or implementation, or to implement certain "contingency" control measures. The contingency measures are control options that could be instituted in addition to the control measures already in place. Federal CAA requires that AQMD plans include contingency measures.

Contingency measures must be fully adopted rules or control measures that are ready to be implemented without significant further action by the State or EPA, upon determination by EPA that the area has failed to achieve, or maintain reasonable further progress, or attain the lead NAAQS by the statutory attainment date. The contingency measures include measures that will be implemented without further action (or only minimal action) by the state or by the Administrator. It should also contain trigger mechanisms with specific schedule for implementation. The following lists the "contingency" measures that are fully adopted as part of AQMD Rule 1420.1:

- ***Rule 1420.1 Compliance Plan:*** On and after July 1, 2011, if a facility approaches the lead ambient air quality standard with a 30-day rolling average of 0.12 ug/m^3 as determined by monitors pursuant to Rule 1420.1 or at any District-installed monitor, it will trigger the preparation and submittal of a "Contingency" Compliance Plan by the facility, subject to AQMD approval. The "Contingency" Compliance Plan provision provides a means to identify the necessary measures which can be implemented prior to exceeding the 0.15 ug/m^3 standard and are ready for fast implementation if the 0.15 ug/m^3 ambient standard is exceeded. The Compliance Plan is required to be automatically implemented if the facility exceeds the Rule 1420.1 ambient lead standard of 0.15 ug/m^3. Note that the Rule 1420.1 ambient standard is a 30-day rolling average, which would show an exceedance of the 0.15 ug/m^3 limit before an exceedance of three-month rolling average NAAQS was recorded. Therefore, the contingency provisions of Rule 1420.1 would take effect before a NAAQS exceedance and are thus designed to avoid a NAAQS exceedance. Moreover, they take effect without any further action by EPA or the State and are triggered by the mentioned exceedance of 0.12 ug/m^3.
- ***Rule 1420.1 Feasibility Study:*** On and after July 1, 2011, if emission are discharged into the atmosphere which contribute to ambient air concentrations of lead that exceed 0.12 µg/m3, averaged over any 30 consecutive days, determined by monitors pursuant to Rule 1420.1 or at any District-installed monitor, the owner or operator of a large lead-acid battery recycling facility shall submit a study addressing the technical, economic and physical feasibility of achieving a total facility mass lead emission rate of 0.003 pounds per hour from all lead point

sources (much lower than the current rule 1420.1 cap of 0.045 pounds per hour) . The study shall be submitted within 30 calendar days after exceeding 0.12 µg/m3, averaged over any 30 consecutive days.

- ***Rule 1420.1 Ambient Monitoring:*** On and after January 1, 2012, facilities will not be allowed to discharge lead emissions which contribute to ambient air concentrations of lead exceeding 0.15 $\mu g/m^3$ averaged over any 30 consecutive days measured by fence-line ambient monitors. Given the difficulty in quantifying fugitive lead emissions, and given the known importance of fugitive emissions at lead-acid battery recycling facilities, the ambient monitors provide the most effective means of ensuring compliance with the NAAQS since they capture all emissions. An exceedance of the Rule 1420.1 lead standard averaged over any 30 consecutive days will constitute a violation, as well as triggering implementation of daily monitoring, the Compliance Plan and the Feasibility Study. The ambient monitoring provisions of Rule 1420.1 serve as a contingency measure given that the more stringent 30-day rolling average limit will cause a Rule 1420.1 violation prior to an exceedance of the federal NAAQS based on a three-month rolling average. Through implementation of the Compliance Plan, abatement orders, and prosecution or settlement of the rule violations, actions will be taken to bring the facility into compliance with rule 1420.1 and the federal NAAQS.

A proposed control measure is to amend AQMD Rule 1420 – Emissions Standard for Lead. Rule 1420 applies to all non-vehicular sources of lead emissions and contains requirements for emission levels, controls, housekeeping, and monitoring. In addition, sources must comply with an ambient air quality lead standard of 1.5 $\mu g/m^3$, averaged over 30 days. The proposed amendment seeks to lower the ambient limit in Rule 1420 to 0.15 $\mu g/m^3$ to correspond to the revised NAAQS for lead of 0.15 $\mu g/m^3$. The more stringent, shorter averaging time of a 30 day rolling average will be retained. This proposed amendment will ensure that the Los Angeles County can comply with the federal NAAQS. The 30-day average form of the proposed Rule 1420 limit, being more stringent than the three-month average federal NAAQS, will serve as a contingency measure in the same manner described above for Rule 1420.1 as it will be triggered before any actual violation of the lead NAAQS.

REASONABLE FURTHER PROGRESS (RFP)

The CAA requires SIPs for most nonattainment areas to demonstrate RFP toward attainment through emission reductions phased in from the time of the SIP submission out to the attainment date. The revised lead NAAQS provides further detail on how RFP is to be addressed in lead SIP submittals (73 FR 67038). It states that RFP for lead nonattainment areas should be met by "adherence to an ambitious compliance schedule" which is expected to periodically yield significant emission reductions, and as appropriate, linear progress. The EPA also recommends that SIPs for lead nonattainment areas provide a detailed schedule for compliance of RACM (including RACT) in the affected areas and accurately indicate the corresponding annual emission reductions to be achieved.

The "ambitious compliance schedule" requirement for RFP is already met since adopted Rule 1420.1 contained compliance deadlines of July 1, 2011 for implementation of all requisite control measures and emissions limits, and January 1, 2012 for the ambient monitoring limit of

0.15 μg/m^3. Since Rule 1420.1 is already adopted, and all provisions of the rule leading to emissions reductions are already in effect, there is no need to further indicate annual incremental reductions or linear progress for RFP purposes. The facilities are already subject to emission limits and ambient monitoring requirements that will ensure compliance with the NAAQS.

Furthermore, quantifying annual emission reductions due to Rule 1420.1 is problematic, given the large uncertainties in quantifying fugitive emissions under either controlled or uncontrolled scenarios. In addition, the relationship between emissions and ambient concentrations is subject to emissions inventory and modeling uncertainties. For this reason, this attainment demonstration relies heavily on ambient monitoring to capture the direct impact of fugitive and all other emissions on ambient concentrations, in a manner similar to but more stringent than federal requirements for NAAQS monitoring.

The CAA also requires early implementation of less technology intensive control measures (e.g. controlling fugitive dust emissions at the stationary source, as well as required controls on area sources), and phased in implementation of more technology intensive control measures, such as those involving the installation of new hardware. Rule 1420.1 outlines requirements for total enclosures of all areas which process, handle and store lead-containing materials for the control of fugitive emissions, in addition to add-on controls such as the usage of filters or bags achieving 99.97% control efficiency on 0.3 micron particles, and secondary lead controls on dryers. Rule 1420.1 also includes additional provisions requiring detailed housekeeping, and periodic emissions testing of air pollution control devices. Failure to comply with these requirements will result in violations and the associated further actions to bring the facility into compliance.

REASONABLY AVAILABLE CONTROL MEASURES (RACM) AND REASONABLY AVAILABLE CONTROL TECHNOLOGY (RACT) REQUIREMENTS

The federal Clean Air Act, Section 172(c)(1) and the new lead NAAQS regulation (73 FR 66964), requires lead nonattainment area SIPs contain all reasonably available control measures (RACM), including reasonably available control technology (RACT). For each nonattainment area required to submit an attainment demonstration, Section 172(c)(1) and (c)(2) of the CAA requires the area to demonstrate that it has adopted all control measures necessary to show that it will attain the revised lead standard as expeditiously as practicable. In order to comply with this provision, the AQMD has identified and evaluated all measures it has implemented or plans to implement in the future and compare them with measures implemented by other agencies within and outside of the state. Once the process of determining RACM for an area is completed, the individual measures should then be converted into a legally enforceable vehicle (e.g. a regulation or permit program), as it was done for Rule 1420.1.

RACM should address sources of ambient lead concentration, but primarily limited to stationary sources emitting more than 0.5 tons per year (73 FR 67037). Based on monitoring data, the AQMD staff has identified large lead-acid battery recycling facilities as the only stationary source emitters of lead in the Los Angeles County, that cause or has the potential to cause exceedances of the new lead NAAQS. As a result, On November 5, 2010, the AQMD adopted Rule 1420.1 – Emissions Standard for Lead From Large Lead-Acid Battery Recycling Facilities.

The purpose of the rule is to protect public health by reducing exposure and emissions of lead from large lead-acid battery recycling facilities, and to address the new NAAQS for lead to ensure the Los Angeles County can achieve the revised lead standards.

RACM should identify potential control measures for sources of lead in the nonattainment area. The control measures should be evaluated for reasonableness, considering their technological feasibility and the cost of control within the nonattainment area. Rule 1420.1 includes extensive and comprehensive provisions for the control of lead point source and fugitive emissions.

The EPA's historic definition of RACT is the lowest emissions limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility. RACT applies to the "existing sources" of lead in an area emitting 0.5 tons per year or more, including stack emissions, industrial process fugitive emissions, and industrial fugitive dust emission. The CAA requires the EPA to revise RACT, update existing Control Technique Guidelines (CTG) documents, or develop new documents, on a frequent basis to provide states and local agencies with most current technical information and assist them in determining RACT. AQMD staff compared the current requirements in the AQMD's rules pertaining to lead emissions with the requirements in the revised CTGs as part of the Rule 1420.1 development process. Rule 1420.1 meets or exceeds the emissions controls provided in the CTGs.

To address technological and economic feasibility, a socioeconomic assessment was conducted to analyze the costs associated with compliance under Rule 1420.1 as part of the rule development process. In addition, pursuant to California Environmental Quality Act (CEQA) Guidelines §15252 and AQMD Rule 110, the AQMD prepared an Environmental Assessment for Rule 1420.1.[2] The socioeconomic assessment for Rule 1420.1 is provided in Appendix II.
The AQMD staff has concluded that Rule 1420.1 fulfills the RACM/RACT requirements for the revised lead NAAQS. In general, the AQMD's current rules and regulations are equivalent to or more stringent than those developed by other air districts. Table 6-1 provides a comparative analysis of Rule 1420.1 and rule 1420 with the monitoring requirements of the new lead NAAQS regulation and NESHAP requirements for secondary lead smelters. Moreover, AQMD proposes to revise Rule 1420 in the 4th quarter of 2012, which will ensure that sources of lead which are not subject to Rule 1420.1 will never exceed the 2008 NAAQS for lead. No such sources currently exceed the 2008 NAAQS for lead.

[2] From AQMD's website, available at: http://www.aqmd.gov/ceqa/aqmd.html

TABLE 6-1

Comparison of AQMD Rule 1420.1 with AQMD Rule 1420, the 2008 Lead NAAQS, and the NESHAP for Secondary Lead Smelters

Rule Element	AQMD Rule 1420.1	AQMD Rule 1420	2008 Lead NAAQS	NESHAP from Secondary Lead Smelting
Applicability	Lead-acid battery recycling facilities that have processed more than 50,000 lead-tons/year in the past 5 years or in any future year	Facilities that use or process lead-containing materials	All lead sources	Secondary lead smelters
Ambient Air Quality Standard	On and after January 1, 2012, meet 0.15 $\mu g/m^3$ averaged over 30 consecutive days	1.5 $\mu g/m^3$ averaged over 30 days	0.15 $\mu g/m^3$: - 3-month average of monthly averages - Demonstrated over a 3-year period.	None
Total Enclosures	Total enclosures for main areas where processing, handling and storage of lead-containing materials occur	None[3]	None[4]	Total <u>or</u> partial enclosures for: - Smelting furnace and dryer charging hoppers, chutes, and skip hoists; - Smelting furnace lead taps, and molds during tapping; - Refining kettles; - Dryer transition pieces; and - Agglomerating furnace product taps
Emission Standard and Requirements for Lead Control Devices	- Total facility mass emission rate of 0.045 lbs/hr of lead from all lead point sources; maximum emission rate of 0.010 lb/hr of lead for any individual lead point source - Use of filters or bags that are rated	99% control efficiency for particulate matter; 98% control efficiency for lead	None	Concentration of 2.0 mg/dscm

[3] Total enclosures have been required through Compliance Plans and legal actions.
[4] Effective date for the NAAQS is five years after final attainment designation.

Rule Element	AQMD Rule 1420.1	AQMD Rule 1420	2008 Lead NAAQS	NESHAP from Secondary Lead Smelting
	by the manufacturer to achieve 99.97 percent control efficiency on 0.3 micron particles or made of PTFE membrane material - Secondary lead controls on dryer			
Compliance Plan	Only required if a facility exceeds 0.12 µg/m^3; 30 consecutive day avg.; Identifies additional lead control measures beyond the rule; Begin implementation if facility exceeds 0.15 µg/m^3; 30 consecutive day avg.	Specifies general facility information[5]	None	None
Ambient Air Monitoring Requirements	- Minimum of four monitors at facility locations approved by the Executive Officer - Samples collected at least once every three days - Results reported monthly - Daily sampling if 0.15 µg/m^3 is exceeded after January 1, 2012	- Minimum of two monitors at facility locations approved by the Executive Officer - Samples collected every six days - Results reported quarterly	For states, a minimum of: - One source-oriented monitor at all facilities emitting 0.5 tons of lead/year; and - One non-source-oriented monitor in urban areas with a population of at least 500,000 people - Samples collected every six days	None
Housekeeping Requirements	Prescribed requirements for cleaning frequencies of specific areas; maintenance activity; building integrity inspections; storage and transport of lead-containing materials; onsite mobile	Requirements for storage of dust-forming material; weekly cleaning of surfaces subject to vehicular or foot traffic; and storage, disposal, recovery, and recycling of lead or lead-containing	None	Periodic wash down of plant roadways (lower frequency than Rule 1420.1); wet suppression of battery breaking area storage piles; vehicle wet washing of vehicles exiting the materials

[5] Additional facility requirements have been added through revised Compliance Plans.

Rule Element	AQMD Rule 1420.1	AQMD Rule 1420	2008 Lead NAAQS	NESHAP from Secondary Lead Smelting
	sweeping; and surface impoundment cleanings	wastes generated from housekeeping activities[6]		handling and storage areas
Reporting Requirements	- Ambient air lead and wind monitoring; - Shutdown, turnaround, and maintenance activity reports; - Public notifications for specific shutdown and maintenance activity; - Initial Facility Status Reports - Ongoing Facility Status Reports	Ambient air lead and wind monitoring for any lead-processing facility that is required or elects to do ambient air monitoring	For states: - SIP submittal; - Emission reports; and - Ambient air quality data	- Lead control alarm/failure reports including fugitive dust control measures performed during failures

[6] Additional housekeeping measures have been required through revised Compliance Plans and legal actions.

APPENDIX I

LEAD AIR QUALITY IN LOS ANGELES COUNTY

The Appendix I includes:

- Monitoring data from fence-line sites
  - Exide daily and 30 day rolling averages
  - Quemetco daily and 30 day rolling averages
- Monitoring data from network sites
  - One- and three- month averages
  - Daily average data - AQS
- Source-oriented sites
  - One- and three- month averages
  - Exide – Daily averages
  - Quemetco – Daily averages
  - Trojan – Daily averages
  - Van Nuys Airport – Daily averages

APPENDIX II

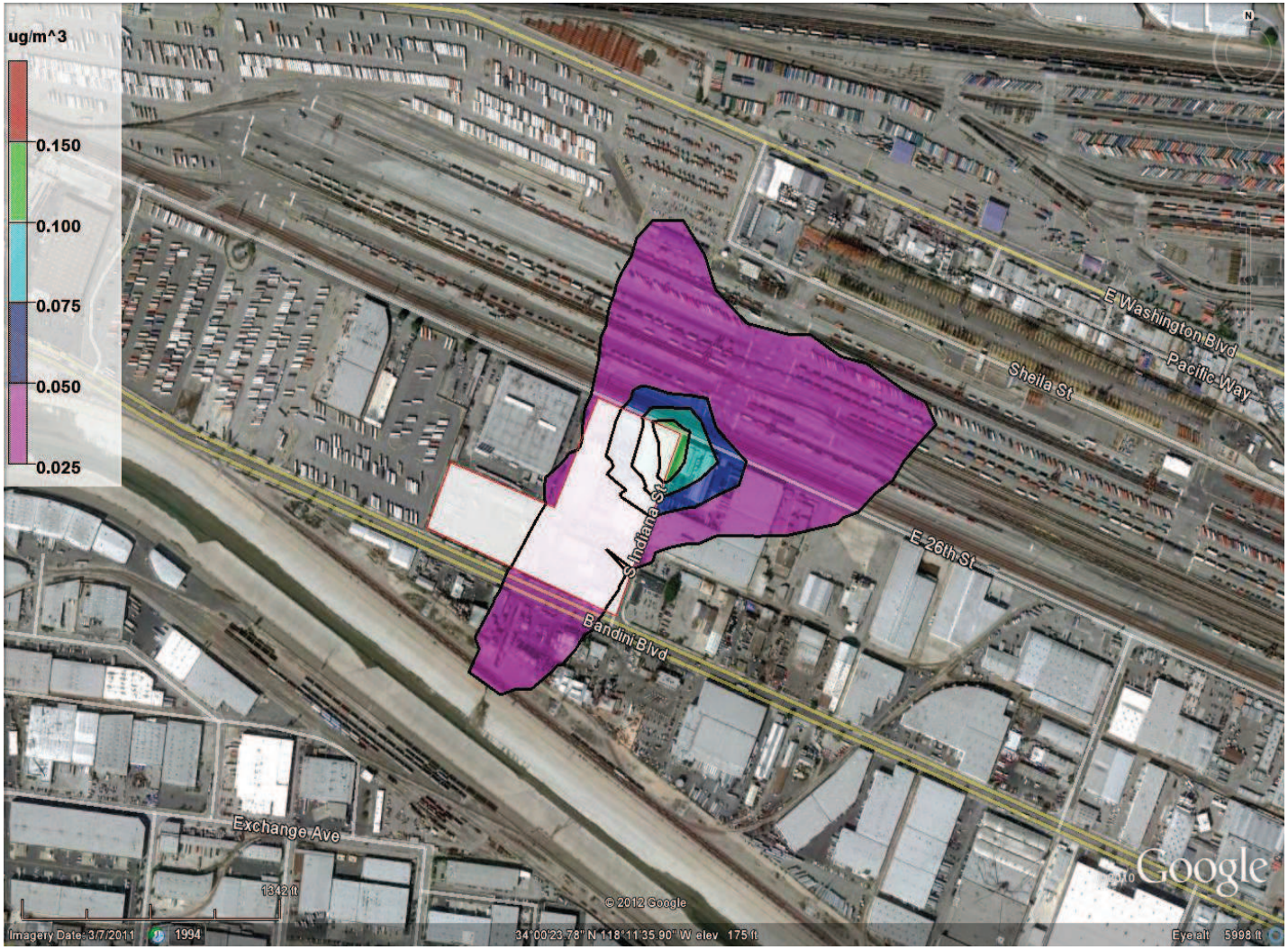
RULES

APPENDIX III

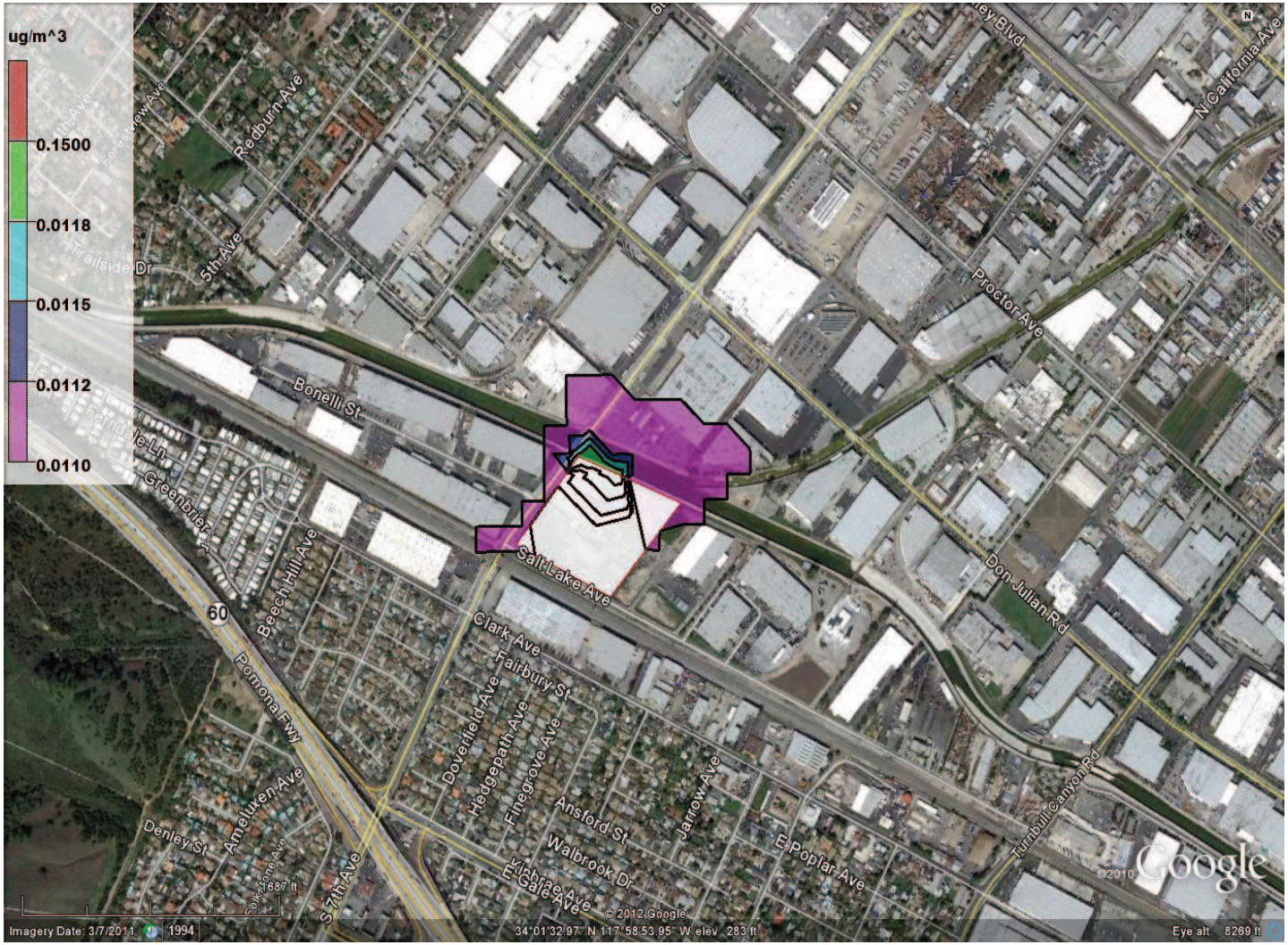
MODELING AND ATTAINMENT DEMONSTRATION

Exide – Existing Lead Concentrations (ug/m^3)
Using 2010 AER Emissions

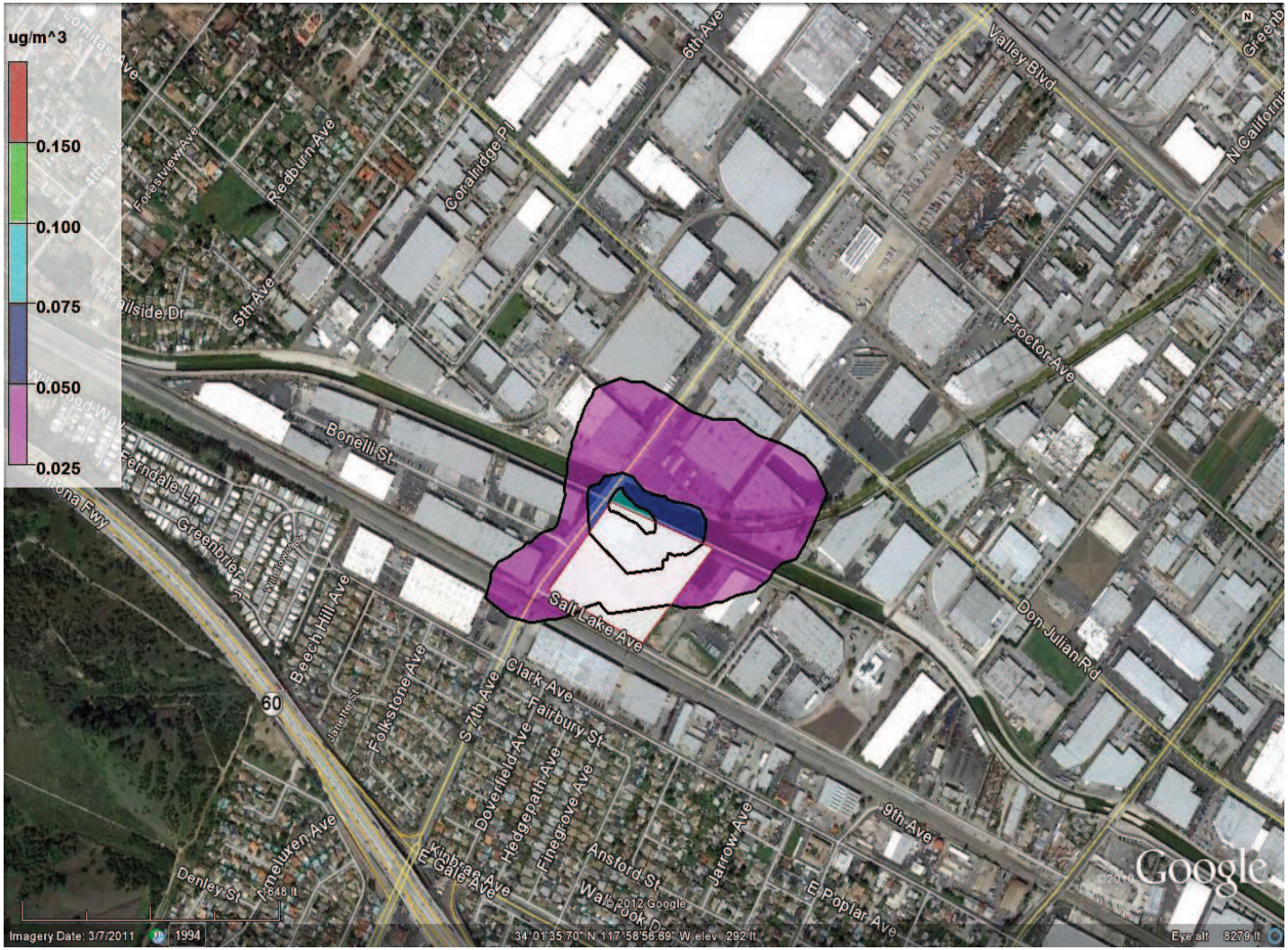
Exide – Future Lead Concentrations (ug/m^3)
Using Rule 1420.1 Emission Limits



Quemetco – Existing Lead Concentrations (ug/m^3)
Using 2010 AER Emissions



Quemetco – Future Lead Concentrations (ug/m^3)
Using Rule 1420.1 Emission Limits



APPENDIX IV

SOCIOECONOMIC REPORT FOR RULE 1420.1