Texas Commission on Environmental Quality
Interoffice Memorandum

To: Commissioners **Date:** July 20, 2012

Thru: Bridget C. Bohac, Chief Clerk
Zak Covar, Executive Director

From: Steve Hagle, P.E., Deputy Director, Office of Air

Docket No.: 2011-0282-SIP

Subject: Commission Approval for Adoption of the Collin County Attainment Demonstration State Implementation Plan (SIP) Revision for the 2008 Lead National Ambient Air Quality Standard (NAAQS)
Non-Rule Project No. 2011-001-SIP-NR

Background and reason(s) for the SIP revision:
On October 15, 2008, the United States Environmental Protection Agency (EPA) substantially strengthened the lead NAAQS. The new standard, set at 0.15 micrograms per cubic meter ($\mu g/m^3$) measured as a rolling three-month average, is at least 10 times more stringent than the previous standard established in 1978 of 1.5 $\mu g/m^3$ measured as a quarterly average. Effective December 31, 2010, the EPA designated an area surrounding Exide Technologies (Exide) located in Frisco, Collin County, as nonattainment for the 2008 lead NAAQS (75 FR 71033).

Section 110(a)(1) of the Federal Clean Air Act (FCAA) requires states to submit a SIP revision for areas that have been designated nonattainment to provide for the implementation, maintenance, and enforcement of the NAAQS. For lead, states are required to adopt and submit attainment demonstration SIP revisions within 18 months of designation. In accordance with FCAA, §172 and implementation guidance published with the November 12, 2008, final Lead NAAQS (73 FR 66964), the SIP revision contains a reasonably available control measure (RACM) and a reasonably available control technology (RACT) analysis, demonstration of attainment through air dispersion modeling, a control strategy demonstration, an emissions inventory, a demonstration of reasonable further progress (RFP), and contingency measures.

Scope of the SIP revision:

A.) Summary of what the SIP revision will do:
The Collin County Lead Attainment Demonstration SIP revision will demonstrate attainment using an air dispersion modeling analysis that includes existing control strategies as well as the control strategies described in an agreed order with Exide. The Agreed Order is being implemented concurrently with this SIP revision. This SIP revision also includes FCAA-required elements including a RACM and RACT analysis, demonstration of RFP, and a contingency plan.

The control measures and contingency measures that have been identified for the Collin County Lead Attainment Demonstration SIP revision will be enforceable through Agreed Order No. 2011-0521-MIS between the Texas Commission on Environmental Quality

(TCEQ) and Exide. To ensure compliance with the 2008 lead NAAQS, the Agreed Order is being adopted concurrently with this SIP revision. The Agreed Order provides that enforceable measures be implemented to reduce lead emissions in the Collin County lead nonattainment area as soon as possible but no later than January 6, 2014. The SIP revision and Agreed Order contain contingency measures designed to ensure continued compliance with the standard.

Instead of implementing control measures identified in the SIP revision and Agreed Order, Exide may close the plant and cease all production activities. Exide must notify the TCEQ that it intends to select this alternative by November 1, 2012, and the latest date by which Exide would cease operations would be January 6, 2014. Should Exide implement this option, Exide must remove equipment and demolish facilities within one year of cessation of operations and void all air quality authorizations associated with the plant by December 31, 2015, other than any authorizations required for operation of the wastewater treatment plant.

B.) Scope required by federal regulations or state statutes:
In accordance with FCAA, §172(c) and implementation guidance published with the final 2008 lead NAAQS (73 FR 66964), an attainment demonstration for lead must include the following elements:

- RACM and RACT analysis;
- dispersion modeling demonstrating attainment by the required December 2015 deadline;
- control strategy demonstration;
- emissions inventory;
- contingency measures; and
- demonstration of RFP.

C.) Additional staff recommendations that are not required by federal rule or state statute:
None

Statutory authority:
The authority to adopt SIP revisions is derived from Texas Health and Safety Code, Texas Clean Air Act (TCAA), §382.002, which provides that the policy and purpose of the TCAA is to safeguard the state's air resources from pollution; TCAA, §382.011, which authorizes the commission to control the quality of the state's air; TCAA, §382.012, which authorizes the commission to prepare and develop a general, comprehensive plan for the control of the state's air; and Texas Water Code, §5.02, General Powers, and §5.013, General Jurisdiction of the Commission.

FCAA, 42 United States Code §§7401, *et seq*., requires states to submit SIP revisions that specify the manner in which the NAAQS will be achieved and maintained within each air

quality control region of the state. Additionally, the specific requirements for the 2008 lead NAAQS were published in the November 12, 2008, issue of the *Federal Register* (73 FR 66964).

Effect on the:
A.) Regulated community:
The affected regulated community consists of Exide, which is the primary contributing source of lead in the nonattainment area. Exide will be required to install additional control technologies to meet the NAAQS, implement new work practices, and comply with additional monitoring and recordkeeping requirements. For further information, please refer to the executive summary in the narrative of the Collin County Lead Attainment Demonstration SIP revision, which contains details of the controls set out in the Agreed Order.

B.) Public:
The general public in the Frisco area will benefit from improved air quality from reduced lead emissions.

C.) Agency programs:
This SIP revision will have no new effect on agency programs.

Stakeholder meetings:
A stakeholder meeting for the Collin County Lead Attainment Demonstration SIP revision was held on January 19, 2011, in Frisco. Stakeholders expressed numerous concerns about air quality, public health, industry-related emissions, proposed control strategies, and property values.

Public comment:
The public comment period opened on June 24, 2011, and closed on August 8, 2011. Notice of a public hearing for this SIP revision and Agreed Order was published in the *Texas Register* and various newspapers. Written comments were accepted via mail, fax, and through the TCEQ's eComments system.

The commission held a public hearing for the proposed Collin County Lead Attainment Demonstration SIP revision for the 2008 Lead NAAQS, which included Agreed Order 2011-0521-MIS, on July 28, 2011, at 6:00 p.m. at the Frisco City Council Chambers in Frisco. During the comment period the commission received comments from Downwinders at Risk, the EPA, Exide, Texas Campaign for the Environment, and 23 individuals.

Significant changes from proposal:
Due to substantial comments from the public and the EPA on the proposed SIP revision and Agreed Order, the SIP and Agreed Order have been revised. Based on the specific comments received, the TCEQ revised the dispersion modeling analysis to include a

background lead concentration and to account for potential fugitive emissions from fully enclosed buildings. The compliance date for the implementation of the control measures has changed from November 1, 2012, to January 6, 2014. This change allows Exide the time to make the necessary improvements and obtain building permits from the City of Frisco as needed.

On June 4, 2012, the City of Frisco and Exide approved an agreement that would result in the sale of approximately 180 acres of undeveloped land surrounding Exide's plant. Under the terms of the agreement, the land around Exide's plant will be sold to the Frisco Community Development Corporation and the Frisco Economic Development Commission Corporation.

This agreement stipulates that Exide will retain ownership of the federal and state permitted plant site. As part of the proposed agreement, Exide would cease business operations no later than January 6, 2014, and would void its air quality permits by December 31, 2015, other than any authorizations required for operation of the wastewater treatment plant. Exide will assume responsibility for cleaning up the permitted plant site, including removal of all vertical structures with the exception of an administrative office building and wastewater treatment plant. The SIP revision and Agreed Order have been revised to reflect this agreement.

Potential controversial concerns and legislative interest:
The City of Frisco, the citizens of Frisco, and the Honorable Florence Shapiro, Texas Senator, District 8, have expressed considerable concern regarding Frisco's air quality. Parties have also expressed great interest in expediting emission reductions at the Exide facility.

Does this SIP revision affect any current policies or require development of new policies?
No

What are the consequences if this SIP revision does not go forward? Are there alternatives to SIP revision?
The commission could choose not to comply with requirements to develop and submit this lead attainment demonstration SIP revision to the EPA. If this SIP revision is not submitted by June 30, 2012, the EPA could issue a finding of failure to submit requiring that the commission submit the required SIP revision within a specified time period and imposing sanctions on the state. The EPA would be required to promulgate a Federal Implementation Plan (FIP) if the commission failed to make the submission within two years. Sanctions could include transportation funding restrictions and grant withholdings. The EPA would be required to impose such sanctions and implement a FIP until it approved a replacement SIP for the area.

Alternatively, the commission could propose a SIP revision that relies on rule changes as the control strategy for the SIP. This process would require a new proposal, followed by a public notice and comment period, and a revised SIP revision based on the controls required by the rulemaking.

Key points in the adoption SIP revision schedule:
***Texas Register* publication of public hearing date:** June 24, 2011
SIP revision due to the EPA: June 30, 2012

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REVISIONS TO THE STATE OF TEXAS AIR QUALITY IMPLEMENTATION PLAN FOR THE CONTROL OF LEAD AIR POLLUTION

COLLIN COUNTY LEAD NONATTAINMENT AREA

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
P.O. BOX 13087
AUSTIN, TEXAS 78711-3087

COLLIN COUNTY ATTAINMENT DEMONSTRATION STATE IMPLEMENTATION PLAN REVISION FOR THE 2008 LEAD NATIONAL AMBIENT AIR QUALITY STANDARD

2011-001-SIP-NR

Adoption
August 8, 2012

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EXECUTIVE SUMMARY

On October 15, 2008, the United States Environmental Protection Agency (EPA) substantially strengthened the National Ambient Air Quality Standard (NAAQS) for lead. The new standard, 0.15 micrograms per cubic meter ($\mu g/m^3$) measured as a rolling three-month average, is at least 10 times more stringent than the previous standard of 1.5 $\mu g/m^3$ measured as a quarterly average. On October 14, 2009, the governor of Texas submitted to the EPA a recommendation that a portion of Collin County, surrounding the Exide Technologies' (Exide) battery recycling plant located in Frisco, Texas, be designated as a lead nonattainment area. This recommendation was based on 2006 through 2008 monitoring data, air dispersion modeling, and analysis of additional factors as prescribed by the EPA. On October 12, 2010, the governor of Texas submitted an updated recommendation, which reflected a permit amendment, lowering Exide's maximum permitted allowable emission rate and the resulting smaller nonattainment area. On November 22, 2010, the EPA designated the final recommended portion of Collin County as nonattainment for the 2008 lead NAAQS effective December 31, 2010 (75 FR 71033).

Section 191(a) of the Federal Clean Air Act (FCAA) requires that states with lead nonattainment areas submit to the EPA an attainment demonstration state implementation plan (SIP) revision within 18 months of the effective designation date. The state is required to submit an attainment demonstration SIP revision for lead by June 30, 2012, and to demonstrate that the area will reach attainment of the 2008 lead NAAQS by December 31, 2015.

This SIP revision demonstrates attainment using air dispersion modeling that includes control strategies already in use at the Exide site as well as additional measures being adopted concurrently with this SIP revision. This SIP revision also contains FCAA-required elements, including a reasonably available control measure and a reasonably available control technology analysis, demonstration of reasonable further progress, and a contingency plan.

The control measures and contingency measures included in this SIP revision will be enforceable through an Agreed Order between the Texas Commission on Environmental Quality and Exide (see Appendix A: *Agreed Order 2011-0521-MIS*). To ensure compliance with the 2008 lead NAAQS, the Agreed Order is being adopted concurrently with this SIP revision. The Agreed Order provides enforceable measures to reduce emissions necessary for the Collin County lead nonattainment area to attain the 2008 lead NAAQS as expeditiously as practicable, but no later than December 31, 2015, and contains contingency measures designed to ensure continued compliance with the standard. Instead of implementing control measures identified in the SIP revision and Agreed Order, Exide may close the plant and cease all manufacturing activities. Should Exide implement this option, Exide must cease operation of the plant no later than January 6, 2014, and void all air quality authorizations for the plant by December 31, 2015, other than any authorizations required for operation of the wastewater treatment plant.

Although Exide has reached an agreement with the City of Frisco to close the plant, TCEQ is not a part of that agreement. The FCAA imposes specific requirements that must be included in an attainment demonstration SIP revision, including a reasonably available control technology and reasonably available control measures analysis, contingency measures, control measures, and a demonstration that the area will reach attainment by the attainment date. This SIP revision includes each of these elements, as required by the FCAA.

SECTION V-A: LEGAL AUTHORITY

A. General

The Texas Commission on Environmental Quality (TCEQ) has the legal authority to implement, maintain, and enforce the National Ambient Air Quality Standards (NAAQS) and to control the quality of the state's air, including maintaining adequate visibility.

The first air pollution control act, known as the Clean Air Act of Texas, was passed by the Texas Legislature in 1965. In 1967, the Clean Air Act of Texas was superseded by a more comprehensive statute, the Texas Clean Air Act (TCAA), found in Article 4477-5, Vernon's Texas Civil Statutes. The legislature amended the TCAA in 1969, 1971, 1973, 1979, 1985, 1987, 1989, 1991, 1993, 1995, 1997, 1999, 2001, 2003, 2005, 2007, 2009, and 2011. In 1989, the TCAA was codified as Chapter 382 of the Texas Health and Safety Code.

Originally, the TCAA stated that the Texas Air Control Board (TACB) was the state air pollution control agency and the principal authority in the state on matters relating to the quality of air resources. In 1991, the legislature abolished the TACB effective September 1, 1993, and its powers, duties, responsibilities, and functions were transferred to the Texas Natural Resource Conservation Commission (TNRCC). With the creation of the TNRCC, the authority over air quality is found in both the Texas Water Code and the TCAA. Specifically, the authority of the TNRCC is found in Chapters 5 and 7. Chapter 5, Subchapters A - F, H - J, and L, include the general provisions, organization, and general powers and duties of the TNRCC, and the responsibilities and authority of the executive director. Chapter 5 also authorizes the TNRCC to implement action when emergency conditions arise and to conduct hearings. Chapter 7 gives the TNRCC enforcement authority. In 2001, the 77th Texas Legislature continued the existence of the TNRCC until September 1, 2013, and changed the name of the TNRCC to the Texas Commission on Environmental Quality (TCEQ). In 2009, the 81st Texas Legislature, during a special session, amended section 5.014 of the Texas Water Code, changing the expiration date of the TCEQ to September 1, 2011, unless continued in existence by the Texas Sunset Act. In 2011, the 82nd Texas Legislature continued the existence of the TCEQ until 2023.

The TCAA specifically authorizes the TCEQ to establish the level of quality to be maintained in the state's air and to control the quality of the state's air by preparing and developing a general, comprehensive plan. The TCAA, Subchapters A - D, also authorize the TCEQ to collect information to enable the commission to develop an inventory of emissions; to conduct research and investigations; to enter property and examine records; to prescribe monitoring requirements; to institute enforcement proceedings; to enter into contracts and execute instruments; to formulate rules; to issue orders taking into consideration factors bearing upon health, welfare, social and economic factors, and practicability and reasonableness; to conduct hearings; to establish air quality control regions; to encourage cooperation with citizens' groups and other agencies and political subdivisions of the state as well as with industries and the federal government; and to establish and operate a system of permits for construction or modification of facilities.

Local government authority is found in Subchapter E of the TCAA. Local governments have the same power as the TCEQ to enter property and make inspections. They also may make recommendations to the commission concerning any action of the TCEQ that affects their territorial jurisdiction, may bring enforcement actions, and may execute cooperative agreements with the TCEQ or other local governments. In addition, a city or town may enact and enforce ordinances for the control and abatement of air pollution not inconsistent with the provisions of the TCAA and the rules or orders of the commission.

Subchapters G and H of the TCAA authorize the TCEQ to establish vehicle inspection and maintenance programs in certain areas of the state, consistent with the requirements of the Federal Clean Air Act; coordinate with federal, state, and local transportation planning agencies to develop and implement transportation programs and measures necessary to attain and maintain the NAAQS; establish gasoline volatility and low emission diesel standards; and fund and authorize participating counties to implement vehicle repair assistance, retrofit, and accelerated vehicle retirement programs.

B. Applicable Law

The following statutes and rules provide necessary authority to adopt and implement the state implementation plan (SIP). The rules listed below have previously been submitted as part of the SIP.

Statutes

All sections of each subchapter are included, unless otherwise noted.

TEXAS HEALTH & SAFETY CODE, Chapter 382	September 1, 2011
TEXAS WATER CODE	September 1, 2011

Chapter 5: Texas Natural Resource Conservation Commission
- Subchapter A: General Provisions
- Subchapter B: Organization of the Texas Natural Resource Conservation Commission
- Subchapter C: Texas Natural Resource Conservation Commission
- Subchapter D: General Powers and Duties of the Commission
- Subchapter E: Administrative Provisions for Commission
- Subchapter F: Executive Director (except §§5.225, 5.226, 5.227, 5.2275,5.231, 5.232, and 5.236)
- Subchapter H: Delegation of Hearings
- Subchapter I: Judicial Review
- Subchapter J: Consolidated Permit Processing
- Subchapter L: Emergency and Temporary Orders (§§5.514, 5.5145, and 5.515 only)
- Subchapter M: Environmental Permitting Procedures (§5.558 only)

Chapter 7: Enforcement
- Subchapter A: General Provisions (§§7.001, 7.002, 7.0025, 7.004, and 7.005 only)
- Subchapter B: Corrective Action and Injunctive Relief (§7.032 only)
- Subchapter C: Administrative Penalties
- Subchapter D: Civil Penalties (except §7.109)
- Subchapter E: Criminal Offenses and Penalties: §§7.177, 7.179-7.183

Rules

All of the following rules are found in 30 Texas Administrative Code, as of the following latest effective dates:

Chapter 7: Memoranda of Understanding, §§7.110 and 7.119	December 13, 1996 and May 2, 2002
Chapter 19: Electronic Reporting	March 15, 2007
Chapter 35: Subchapters A-C, K: Emergency and Temporary Orders and Permits; Temporary Suspension or Amendment of Permit Conditions	July 20, 2006

Chapter 39: Public Notice, §§39.402(a)(1) - (6), (8), and (10) - (12), 39.405(f)(3) and (g), (h)(1)(A) - (4), (6), (8) - (11), (i) and (j), 39.407, 39.409, 39.411(a), (e)(1) - (4)(A)(i) and (iii), (4)(B), (5)(A) and (B), and (6) - (10), (11)(A)(i) and (iii) and (iv), (11)(B) - (F), (13) and (15), and (f)(1) - (8), (g) and (h), 39.418(a), (b)(2)(A), (b)(3), and (c), 39.419(e), 39.420 (c)(1)(A) - (D)(i)(I) and (II), (D)(ii), (c)(2), (d) - (e), and (h), and 39.601 - 39.605	June 24, 2010
Chapter 55: Requests for Reconsideration and Contested Case Hearings; Public Comment, §§55.150, 55.152(a)(1), (2), (5), and (6) and (b), 55.154(a), (b), (c)(1) - (3), and (5), and (d) - (g), and 55.156(a), (b), (c)(1), (e), and (g)	June 24, 2010
Chapter 101: General Air Quality Rules	October 27, 2011
Chapter 106: Permits by Rule, Subchapter A	May 15, 2011
Chapter 111: Control of Air Pollution from Visible Emissions and Particulate Matter	February 16, 2012
Chapter 112: Control of Air Pollution from Sulfur Compounds	July 16, 1997
Chapter 113: Standards of Performance for Hazardous Air Pollutants and for Designated Facilities and Pollutants	May 14, 2009
Chapter 114: Control of Air Pollution from Motor Vehicles	August 11, 2011
Chapter 115: Control of Air Pollution from Volatile Organic Compounds	December 29, 2011
Chapter 116: Permits for New Construction or Modification	March 1, 2012
Chapter 117: Control of Air Pollution from Nitrogen Compounds	April 19, 2012
Chapter 118: Control of Air Pollution Episodes	March 5, 2000
Chapter 122: §122.122: Potential to Emit	December 11, 2002
Chapter 122: §122.215: Minor Permit Revisions	June 3, 2001
Chapter 122: §122.216: Applications for Minor Permit Revisions	June 3, 2001
Chapter 122: §122.217: Procedures for Minor Permit Revisions	December 11, 2002
Chapter 122: §122.218: Minor Permit Revision Procedures for Permit Revisions Involving the Use of Economic Incentives, Marketable Permits, and Emissions Trading	June 3, 2001

SECTION VI: CONTROL STRATEGY

A. Introduction (No change)
B. Ozone (No Change)
C. Particulate Matter (No change)
D. Carbon Monoxide (No change)
E. Lead (Revised)
    1. 1980 State Implementation Plan for the Control of Lead Air Pollution (No change)
    2. 1993 Lead SIP Revisions for Collin County (No change)
    3. 1999 Lead SIP Revisions for Collin County (No change)
    4. 2009 Collin County Maintenance Plan for Lead (No change)
    5. 2011 Collin County Attainment Demonstration SIP Revision for the 2008 Lead NAAQS (New)
F. Oxides of Nitrogen (No change)
G. Sulfur Dioxide (No change)
H. Conformity with the National Ambient Air Quality Standards (No change)
I. Site Specific (No change)
J. Mobile Sources Strategies (No change)
K. Clean Air Interstate Rule (No change)
L. Transport (No change)
M. Regional Haze (No change)

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LIST OF ACRONYMS

ADEC	Alaska Department of Environmental Conservation
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
AIRS	Aerometric Information Retrieval System
ANR	air monitoring network review
AQS	Air Quality System
AQS ID	Air Quality System Identification
ASOS	Automated Surface Observing System
BPIPPRM	Building Profile Input Program for Plume Rise Model Enhancements
CAMS	Continuous Air Monitoring Station
CFR	Code of Federal Regulations
cm	centimeters
DEM	digital elevation model
EAF	electric arc furnace
EI	emissions inventories
EIQ	emissions inventory questionnaires
EPA	United States Environmental Protection Agency
EPN	Emission Point Number
ERG	Eastern Research Group, Inc.
FCAA	Federal Clean Air Act
FIN	Facility Identification Number
FR	*Federal Register*
GEP	good engineering practice
GNB	GNB Technologies, Inc.
GPS	global positioning system
HAP	hazardous air pollutants
HEPA	high efficiency particulate air
ISHD	Integrated Surface Hourly Data
km	kilometer
lb/hr	pounds per hour
lb/hr•m^2	pounds per hour per square meter
m/sec	meters per second
mph	miles per hour

NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NLCD	National Land Cover Database
PRIME	Plume Rise Model Enhancements
psia	pounds per square inch absolute
PTFE	polytetrafluoroethylene
R^2	correlation coefficient
RACM	reasonably available control measure
RACT	reasonably available control technology
RFP	reasonable further progress
scfm	standard cubic feet per minute
scm/sec	standard cubic meter per second
SIP	state implementation plan
SSE	south-southeast
TAC	Texas Administrative Code
TACB	Texas Air Control Board
TCAA	Texas Clean Air Act
TCEQ	Texas Commission on Environmental Quality (commission)
TNRCC	Texas Natural Resource Conservation Commission
tons/hr	tons per hour
tpd	tons per day
tpy	tons per year
USGS	United States Geological Survey
$\mu g/m^3$	micrograms per cubic meter
WESP	wet electrostatic precipitator

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CHAPTER 1: GENERAL

1.1 BACKGROUND

The *History of the Texas State Implementation Plan (SIP)*, a comprehensive overview of the SIP revisions submitted to the United States Environmental Protection Agency (EPA) by the State of Texas, is available on the Texas Commission on Environmental Quality's (TCEQ) Introduction to the Texas SIP Web page (http://www.tceq.texas.gov/airquality/sip/sipintro.html).

1.2 INTRODUCTION

The EPA designated a portion of Collin County as a lead nonattainment area for the 1978 lead National Ambient Air Quality Standard (NAAQS) on November 6, 1991 (56 FR 56694). The EPA approved the Collin County lead attainment demonstration SIP revision for the 1978 lead NAAQS on November 29, 1994 (59 FR 60930). The EPA redesignated the area to attainment and approved the first 10-year maintenance plan in October 15, 1999 (64 FR 55421). In 2009, the TCEQ submitted to the EPA the second and final 10-year maintenance plan for the 1978 lead NAAQS. The maintenance plan included contingency measures to promptly correct any violation of the 1978 lead NAAQS. Because there was only one significant lead source in the nonattainment area, all measures were directed at this source. The contingency measures included in the 2009 maintenance plan required Exide Technologies' (Exide) battery recycling plant to do one of the following if the area monitored lead concentrations above the 1978 lead NAAQS:

- automate the scale and feed for the reverberatory furnace;
- expand the existing water misting dust suppression system; or
- implement an alternative measure that will provide, at a minimum, emissions reductions equivalent to those listed previously.

On November 12, 2008, the EPA substantially strengthened the NAAQS for lead. The new standard, set at 0.15 micrograms per cubic meter (µg/m^3) measured as a rolling three-month average, is significantly more stringent than the previous standard of 1.5 µg/m^3 measured as a quarterly average (73 FR 66964). On November 22, 2010, the EPA designated a portion of Collin County surrounding Exide as nonattainment for the 2008 lead NAAQS, effective December 31, 2010 (75 FR 71033). The 2008 lead NAAQS final rule contained a revised method for calculating averaging time for the purposes of comparing monitored data to the NAAQS. Compliance with the 2008 lead NAAQS is based on 36 three-month rolling averages. For an ambient air monitoring site to meet this standard, no three-month rolling average for the previous 36 months prior to the attainment date may exceed 0.15 µg/m^3. The EPA's deadline for Collin County to attain the 2008 lead NAAQS is as expeditiously as practicable, but no later than December 31, 2015. Appendix B: *Monitoring Data from Collin County Lead Monitors* describes available monitoring data in Collin County since November 2002.

1.3 CURRENT SIP REVISION

Effective December 15, 2010, the EPA designated a 1.28 square mile area surrounding Exide in Frisco, Texas, as nonattainment for the 2008 lead NAAQS (75 FR 71033). The nonattainment area is a portion of Collin County located in the City of Frisco that is bounded to the north by latitude 33.153, to the east by longitude -96.822, to the south by latitude 33.131, and to the west by longitude -96.837. Figure 1-1*: Map of Collin County Lead Nonattainment Area* provides a visual representation of the nonattainment area. Lead nonattainment areas designated in 2010 are required to attain the 2008 lead NAAQS as expeditiously as practicable but no later than December 31, 2015. The state must submit a SIP revision addressing the lead nonattainment

area requirements of the Federal Clean Air Act (FCAA) by June 30, 2012. To ensure that the Collin County nonattainment area attains the 2008 lead NAAQS as expeditiously as practicable, this SIP revision includes control measures implemented during SIP development, but prior to adoption, as agreed upon by Exide. Instead of implementing control measures identified in the SIP revision and accompanying Agreed Order, Exide may close the plant and cease all production activities. Should Exide implement this option, Exide will cease operation of the plant no later than January 6, 2014, and void its air quality permits no later than December 31, 2015, other than any authorizations required for operation of the wastewater treatment plant.

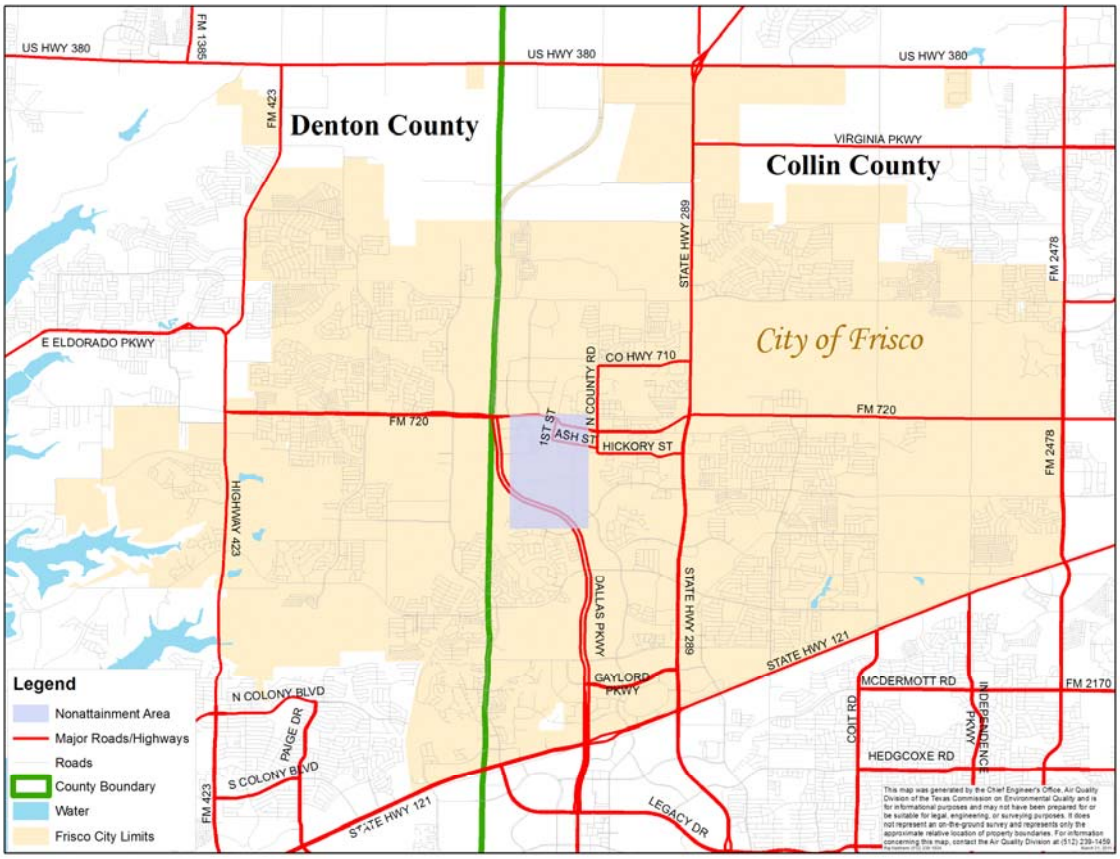

Figure 1-1: Map of Collin County Lead Nonattainment Area

This SIP revision demonstrates attainment of the 2008 lead NAAQS using an air dispersion modeling analysis and contains control measures necessary to bring Collin County into attainment as expeditiously as practicable but no later than December 31, 2015. In addition to control measures, this SIP revision contains contingency measures to be implemented if the area fails to meet the federal deadline or fails to meet reasonable further progress (RFP) requirements. As required by the FCAA and the EPA's implementation guidance for the 2008 lead NAAQS, this SIP revision also contains a reasonably available control measure and a reasonably available control technology analysis, and an RFP demonstration.

The control measures and contingency measures identified for this SIP revision are enforceable through Agreed Order 2011-0521-MIS between the TCEQ and Exide. To ensure compliance with the 2008 lead NAAQS, the Agreed Order is being adopted concurrently with this SIP revision. The Agreed Order provides enforceable measures to reduce emissions necessary for the Collin

County lead nonattainment area to attain the 2008 lead NAAQS as expeditiously as practicable, but no later than December 31, 2015, and contains contingency measures designed to ensure continued compliance with the standard.

1.4 SUMMARY OF MEASURED LEAD CONCENTRATIONS IN FRISCO

The 2008 lead NAAQS final rule contained a revised method for calculating averaging time for the purposes of comparing monitored data to the NAAQS. Compliance with the 2008 lead NAAQS is based on 36 three-month rolling averages. Collin County must monitor attainment of the NAAQS by the EPA's compliance deadline of December 31, 2015.

As of February 27, 2012, the lead design value for Collin County is 0.71 µg/m^3. Table 1-1: *Monitoring Data from Collin County Lead Monitors* describes the most recent 36-month period of lead monitoring data in Collin County.

Table 1-1: Monitoring Data from Collin County Lead Monitors

Monitor/ Aerometric Information Retrieval System Number	Highest 3-month ambient air concentration average in the most recent 36-month period (µg/m^3)		Most recent three-month rolling average as of 2/27/12 (µg/m^3)
Eubanks 480850009	(October 2010)	0.71	0.13
Ash Street 480850007		0.20	0.05
Parkwood 480850003		0.37	0.05
Stonebrook 480850029		0.18	0.03

1.5 HEALTH EFFECTS

On October 15, 2008, the EPA substantially strengthened the NAAQS for lead. According to the EPA's final rule for the 2008 lead NAAQS (73 FR 66964), scientific evidence about lead and health has expanded dramatically since the EPA issued the initial standard of 1.5 µg/m^3 in 1978. More than 6,000 new studies on lead health effects, environmental effects, and lead in the air have been published since 1990. Evidence from health studies shows that adverse effects occur at much lower concentrations of lead in blood than previously thought.

Lead that is emitted into the air can be inhaled directly or ingested after it settles onto surfaces or soils. However, for the general population, exposure to lead occurs primarily via ingestion through contact with contaminated soils or other surfaces. Once taken into the body, lead distributes throughout the body in the blood and accumulates in the bones. Depending on the level of exposure, lead can adversely affect the nervous system, kidney function, immune system, reproductive and developmental systems, and the cardiovascular system. Lead exposure also affects the oxygen-carrying capacity of the blood.

The most commonly encountered effects of lead exposure in current populations are neurological effects in children and cardiovascular effects (e.g., high blood pressure and heart disease) in adults. Children are at a higher risk of exposure to lead when compared to adults. The risk of exposure is higher because children tend to put their hands and other objects, which may contain lead, into their mouths (e.g., lead-based paint chips from older homes). Children also have a higher risk of adverse effects because their brains are still developing. Infants and young children are especially sensitive to low levels of lead, which may contribute to behavioral problems, learning deficits, and lowered Intelligence Quotient.

1.6 PUBLIC COMMENT AND STAKEHOLDER PARTICIPATION

1.6.1 Stakeholder Meetings

The TCEQ held a lead stakeholder meeting to discuss concepts for potential control strategies for the Collin County lead nonattainment area and to present an overview of the SIP revision development process. The meeting was held at the City of Frisco Council Chambers on January 19, 2011. TCEQ staff from the Toxicology, Air Permits, and Air Quality Divisions presented information and answered questions. Staff presented stakeholders with an overview of the health effects of lead, an update on the 2008 lead NAAQS, the associated SIP revision, an overview of the role of modeling in demonstrating attainment, and a draft list of potential control strategies. The presentation and additional information about the lead stakeholder meeting can be found at the SIP for Lead Stakeholder Group Web page (http://www.tceq.texas.gov/airquality/sip/stakeholders/pb_stakeholder).

1.6.2 Public Hearing and Comment Information

The public comment period opened on June 24, 2011, and closed on August 8, 2011. Notice of public hearings for this SIP revision and Agreed Order were published in the *Texas Register* and various newspapers. Written comments were accepted via mail, fax, and through the TCEQ's eComments system.

The commission held a public hearing for the proposed Collin County Attainment Demonstration SIP Revision for the 2008 Lead NAAQS, which included Agreed Order 2011-0521-MIS, on July 28, 2011, at 6:00 p.m. at the Frisco City Council Chambers. During the comment period the commission received comments from Downwinders at Risk, the EPA, Exide, Texas Campaign for the Environment, and 23 individuals.

Electronic copies of the SIP revision, Agreed Order, and all appendices can be obtained from the TCEQ's Texas SIP Revisions Web page (http://www.tceq.texas.gov/airquality/sip/sipplans.html).

1.7 SOCIAL AND ECONOMIC CONSIDERATIONS

No significant fiscal implications are anticipated for the TCEQ or other units of state or local governments as a result of administration or enforcement of Agreed Order 2011-0521-MIS. Because Exide is the primary contributing source to the nonattainment area, all controls to reach attainment will be borne by this source. As such, any economic impacts will be limited to the single lead source associated with this SIP revision. The Agreed Order is expected to have significant fiscal impact to Exide. The citizens living and working within the nonattainment area will benefit from reduced lead emissions.

1.8 FISCAL AND MANPOWER

The TCEQ has determined that its fiscal and manpower resources are adequate and will not be adversely affected through implementation of this plan.

CHAPTER 2: EMISSIONS INVENTORY

2.1 INTRODUCTION

Federal Clean Air Act, §172(c)(3) requires the development of emissions inventories (EI) for nonattainment areas. The Texas Commission on Environmental Quality (TCEQ) maintains a point source EI with information on major lead sources. The EI identifies the types of emissions sources present in an area, the amount of each pollutant emitted, and the types of processes and control devices employed at each plant or source category.

On November 22, 2010, the United States Environmental Protection Agency (EPA) designated a portion of Collin County, located in Frisco, Texas, as a lead nonattainment area, effective December 31, 2010 (75 FR 71033). This nonattainment area surrounds Exide Technologies' (Exide) lead battery recycling plant, a point source that submits annual emissions inventory data to the TCEQ. This chapter discusses general EI development for the point source category. Contributions from non-point sources were found to be insignificant. See Section 2.3: *Other Source Categories* for more information about emissions from non-point source categories.

2.2 POINT SOURCES

2.2.1 Emissions Inventory Development

Stationary point source emissions data are collected annually from sites that meet the reporting requirements of 30 Texas Administrative Code §101.10. The TCEQ receives emissions inventory data from sites identified as meeting the reporting requirements. Companies are required to report emissions data and to provide samples of calculations used to determine the emissions. Information characterizing the process equipment, the abatement units, and the emission points is also required. All data submitted in the emissions inventory questionnaires (EIQ) are reviewed for quality assurance purposes and then stored in the State of Texas Air Reporting System database.

2.2.2 Updated 2010 Emissions Inventory

The TCEQ requested that Exide submit an expedited 2010 lead emissions inventory for all lead-emitting sources located at the company's battery recycling plant in Frisco, Texas. Exide submitted the 2010 lead emissions inventory data to the TCEQ on February 24, 2011. Total reported lead emissions for 2010 are 1.09 tons per year. There are no other point sources in the Collin County nonattainment area that have reported lead emissions to the emissions inventory.

The 2010 lead emissions inventory that Exide submitted on February 24, 2011, is reproduced in Appendix C: *Annual Emissions Inventory Update for Exide Technologies' Frisco Lead Battery Recycling Plant.*

2.3 OTHER SOURCE CATEGORIES

According to the Air Emissions Reporting Requirements (73 FR 76539), only annual point source emissions are required to be reported to the EPA for the 2010 inventory year. Since the next triennial reporting year is 2011, the mobile and area source periodic emissions inventories were not developed for 2010. However, a review of 2008 data indicated an insignificant contribution of lead emissions (less than 0.1%) from these non-point sources. Therefore, the point source category is the only inventory category developed for the inventory year.

CHAPTER 3: AIR DISPERSION MODELING

3.1 INTRODUCTION

The Texas Commission on Environmental Quality (TCEQ) performed a dispersion modeling analysis for the Collin County Attainment Demonstration State Implementation Plan (SIP) Revision for the 2008 Lead National Ambient Air Quality Standard (NAAQS). The dispersion modeling analysis examined the potential effectiveness of proposed emission controls at the Exide Technologies (Exide) site in Frisco, Texas.

The analysis evaluated the air quality impact of the control strategies listed in Section 4.4: *New Control Measures* of this SIP revision and described in Appendix A: *Agreed Order 2011-0521-MIS* between the TCEQ and Exide. Dispersion modeling was used to validate that the control strategies will bring the Collin County lead nonattainment area into compliance with the 2008 lead NAAQS.

3.2 CONCEPTUAL MODEL

3.2.1 Monitoring Data Analysis

In order to determine if all sources of lead at the Exide site were accounted for and if there were other sources of lead near the Exide site, the TCEQ reviewed and analyzed monitoring data from the Eubanks (Aerometric Information Retrieval System (AIRS) number 480850009), Parkwood Street (AIRS number 480850003), and the Ash Street (AIRS number 480850007) monitors for the period 2006 through 2010. Figure 3-1: *Map of Current Lead Monitors in Frisco* shows the location of the current lead monitors in Frisco in relation to the Exide facility. All three monitors are located near Exide's production facility and active landfill. The active landfill is located approximately 75 meters due east of the Eubanks monitor and 330 meters south of the Ash Street monitor. Particular attention was given to data from 2008 as the highest rolling three-month average concentration (May through July 2008) of 1.26 micrograms per cubic meter ($\mu g/m^3$), highest monthly average concentration (May 2008) of 1.56 $\mu g/m^3$, and highest 24-hour average concentration (June 5, 2008) of 3.42 $\mu g/m^3$ for the period of 2006 through 2010.

TCEQ staff compared trends in monitored concentrations to wind direction and wind speed. Since the sampling period for the monitors is 24 hours, days when the wind direction did not vary more than 90 degrees were given more consideration. TCEQ staff also compared concentrations between monitors during identical sampling times. None of the three monitors near the Exide site gathered meteorological data during this time period, e.g., wind speed and wind direction, so the nearest monitor with meteorological data, Frisco Continuous Air Monitoring Station (CAMS) (AIRS number 480850005), was used.

Figure 3-1: Map of Current Lead Monitors in Frisco

The data show that the hourly wind direction when the lead monitors were sampling was either from the south or southeast approximately 49% of time. The wind directions next most frequent during sampling periods were northwest and east, each approximately 12% of the time. Northerly winds occurred approximately 11% of the time. Winds from the northeast, west, and southwest each occurred approximately 5% of time.

The analyses showed that higher lead concentrations were slightly more likely to occur when the wind speeds were high. Though there was a correlation between lead concentrations and wind speed, it was a very weak correlation. When looking at data from each monitor, only the Eubanks monitor data showed a correlation between lead concentrations and wind speed. Data from the Parkwood Street and Ash Street monitors showed no correlation between lead concentrations and wind speed.

When partitioning data by concentration, for concentrations greater than 1.0 µg/m^3, the mean daily wind speed was 10.6 miles per hour (mph). For concentrations less than 1.0 µg/m^3, the mean daily wind speed was 7.5 mph. However, 56 of the 60 24-hour samples greater than 1.0 µg/m^3 occurred at the Eubanks monitor.

When comparing measured concentrations between monitors during identical sampling times, the data show a moderate correlation in concentrations between the Eubanks monitor data and

the Ash Street monitor data. The data show a weak correlation between the Eubanks monitor data and the Parkwood Street monitor data. The data also show a moderate to weak correlation between Ash Street monitor data and the Parkwood Street monitor data. The best fit correlations were exponential relationships.

The following conclusions can be drawn for the monitoring analysis from 2006 through 2010 data.

- Eubanks monitor samples are dominated by emissions from the Exide site processes. The Exide site process area is south to southeast of the Eubanks monitor. Southerly and southeasterly winds will transport emissions from the process area towards the Eubanks monitor.
- The Ash Street and Parkwood Street monitor samples are routinely more indicative of background sources of lead emissions. The Exide site process area is south southwest of the Ash Street monitor and west southwest of the Parkwood Street monitor. With southwesterly and westerly winds being the least frequent, approximately 90% of the winds during this time period are not blowing from the Exide process area to the monitor.
- Based on the 2006 to 2010 data, the Exide site active landfill does not appear to be an appreciable lead emission source. However, the TCEQ will continue to review the data as it is available to determine any potential contribution from the landfill.

Based on the monitoring data, additional fugitive emissions were included with the base case modeling. As a result, model performance was significantly improved. The details of the data analysis are in Appendix D: *Conceptual Model*.

3.2.2 Model Performance Analysis

The TCEQ compared modeled predicted rolling three-month, monthly, and 24-hour average concentrations to monitored concentrations during the period 2006 through 2010. This modeling analysis was a reasonable attempt to replicate actual conditions. The purpose of modeling actual conditions was to determine if all sources were accounted for and appropriately characterized in the modeling. When all sources are accounted for and characterized, the modeling results should reasonably agree qualitatively with the monitoring data. Qualitative agreement would not be exact agreement between modeled and monitored concentrations in time and space but would reflect similarity in concentration trends over time and dispersion patterns in a general area. Once the current actual conditions have been sufficiently replicated, the appropriate target of the control strategies can be inferred.

TCEQ staff initially modeled the maximum hourly allowable emission rates authorized by Exide's permits 1147A and 3048A based on representations approved in October 2010. Given the variability of emissions due to the nature of the processes and not all processes operating at the same time, modeling maximum hourly allowable emission rates occurring from all sources at the same time should produce an over-prediction of ambient concentrations that would exceed any actual monitored value. The maximum modeled concentration was approximate 50% less than the maximum monitored concentration.

Stack testing of point sources associated with permit 1147A demonstrated that these point sources were emitting below maximum hourly allowable emission rates. Analysis of the modeling results showed that fugitive sources dominated the maximum predicted concentrations and the point source impact was minimal.

From the model performance analysis, the following conclusions were made.

- Fugitive emissions from the Exide site process area appear to be under-estimated.
- Control of stack emissions alone is not sufficient to demonstrate compliance with the lead NAAQS.
- Control of fugitive emission sources would significantly reduce monitored concentrations, particularly at the Eubanks monitor.

The details of the model performance analysis for the conceptual model are contained in Appendix D.

3.3 MODEL AND MODELING INPUTS

3.3.1 Model and Model Programs

The dispersion modeling analysis to demonstrate compliance with the lead NAAQS was performed using the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD). There are two input data processors that are regulatory components of the AERMOD modeling system: AERMET, a meteorological data preprocessor that incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, and AERMAP, a terrain data preprocessor that incorporates complex terrain using United States Geological Survey (USGS) Digital Elevation Data. The Building Profile Input Program for Plume Rise Model Enhancements (BPIPPRM), a multi-building dimensions program incorporating the good engineering practice (GEP) technical procedures for Plume Rise Model Enhancements (PRIME) applications was also used.

The selections made for model programs, model settings, meteorological data, and downwash data for this analysis are summarized below.

- AERMOD (Version 11353) was used with default regulatory settings. Since the current version of AERMOD is not capable of calculating rolling three-month average concentrations, the United States Environmental Protection Agency (EPA) post-processor LeadPost (Version 11237) was used. The input values to LeadPost are monthly average values at each receptor in the POSTFILE output format from AERMOD.
- AERMET (Version 11059) was used to process meteorological data for the period 2006 through 2010.
- Downwash parameters were generated using BPIPPRM (Version 04274). Building and point source locations were derived from global positioning system (GPS) measurements by TCEQ regional staff and validated by TCEQ Air Permits Division staff using aerial photography.
- Terrain elevations within the modeling domain were determined using AERMAP (Version 11103). The input data used for this analysis were USGS seamless data covering the following digital elevation models (DEMs): Little Elm, Frisco, Lewisville East, and Hebron data sets.

3.3.2 Meteorology

3.3.2.1 Surface Characteristics

In order to generate meteorological input data for use with AERMOD, surface characteristics (noontime albedo, Bowen ratio, and surface roughness length) of the modeling domain must be obtained for input for AERMET. Values for Bowen ratio and surface roughness length for the modeling domain were calculated using the methodology proposed by the Alaska Department of Environmental Conservation (ADEC) described in *ADEC Guidance re AERMET Geometric Means, How to Calculate the Geometric Mean Bowen Ratio and the Inverse-Distance Weighted Geometric Mean Surface Roughness Length in Alaska,*[1] with input of land cover data from the USGS National Land Cover Database (NLCD) 2006. The ADEC guidance provided an equivalent calculation method to the surface characteristic pre-processor program

AERSURFACE (Version 08009), which requires the input of land cover data from the USGS NLCD 1992. The ADEC guidance is for use with land cover data other than the 1992 NLCD.

The 2006 NLCD was used rather than the 1992 NLCD due to the rapid growth of the Frisco area. From United States Census Bureau data, the 1990 population of Frisco was less than 10,000, the 2000 population was over 30,000, and the 2010 population was over 116, 000. For this reason, the 1992 NLCD was deemed not representative of current land cover characteristics. The 2006 NLCD is the most recent available dataset, so it was used for this modeling analysis.

Using the 1992 NLCD classifications obtained from the AERSURFACE User's Guide,[2] land cover data from 2006 were reclassified to reasonably equivalent 1992 NLCD classifications using documentation from the NLCD 1992/2001 Retrofit Land Cover Change Product.[3] The NLCD 1992/2001 Retrofit Land Cover Change Product is also appropriate for use with the 2006 NLCD.

Representative noontime albedo, Bowen ratio, and surface roughness length values were calculated using the reclassified 2006 NLCD with the ADEC guidance. The noontime albedo and average Bowen ratio values were calculated using the reclassified 2006 NLCD for all land classifications within a 10 kilometer (km) square, as specified by the AERSURFACE User's Guide, surrounding the Exide site. The surface roughness length value was calculated using the reclassified 2006 NLCD for all land classifications within a 1 km radius of the Exide site centroid, as specified by the AERSURFACE User's Guide. The noontime albedo calculated was 0.1747, Bowen ratio was 0.9334, and surface roughness length was 0.2625 meters. Detailed explanations of the methodology and calculations are contained in Appendix E: *Surface Analysis Calculations*.

3.3.2.2 Raw Data Input

Meteorological raw input data were used with generalized surface characteristics of the application site and processed with AERMET (Version 11059). This version of AERMET integrates one-minute Automated Surface Observing System (ASOS) wind data with Integrated Surface Hourly Data (ISHD) using the EPA's AERMINUTE (Version 11325) program. ISHD and one-minute ASOS wind data were obtained from the National Climactic Data Center. The upper air data was obtained from the National Oceanic Atmospheric Administration Earth System Research Laboratory.

Meteorological data from 2006 through 2010 from the Dallas-Fort Worth surface station (Station # 03927) and the Fort Worth upper air station (Station # 03990) were used in these analyses. Missing data from the Dallas-Fort Worth surface station were replaced with available 2006 through 2010 data from the McKinney Airport surface station (Station # 53914). The McKinney Airport was selected because it is the nearest National Weather Service station to the lead nonattainment area. The McKinney Airport ISHD and one-minute ASOS wind data were processed in conjunction with Fort Worth upper air data using AERMET. Any hours that contained missing data in the Dallas-Fort Worth input file were replaced with the corresponding hourly data in the McKinney Airport input file when available. Table 3-1: *Missing and Calm Hours in Meteorological Data* lists the number of hours with missing and filled data. A "calm" is defined as "a reported wind speed less than three knots."

Table 3-1: Missing and Calm Hours in Meteorological Data

Year	Total Hours	Missing Hours Before Fill	Missing Hours After Fill	Calm Hours Before Fill	Calm Hours After Fill
2006	8,760	202	166	28	29
2007	8,760	314	294	37	39
2008	8,784	211	183	117	119
2009	8,760	95	83	19	20
2010	8,760	62	42	63	63

3.3.2.3 Meteorology Sensitivity Analysis

A sensitivity analysis was performed using the base case emissions with unfilled and filled meteorological input data. The rolling three-month average lead concentrations were compared receptor by receptor. At the location of the highest predicted concentration, the difference in concentration was 0.07%. For all receptors within 1 km of the Exide site, the difference was less than 2%, except for five receptors. At those five receptors, the difference was less than 2.5%. Due to the small number of missing hours of data, small number of hours with calms compared to the total number of hours, the highest predicted concentration being at or near the site property line, and the rolling three-month averaging time for predicted concentrations, additional filling of meteorological data would not significantly impact the modeling results.

3.3.3 Receptor Grid

The receptor grid used in the modeling analyses consisted of receptors with 100-meter spacing and extended approximately 3 km from the Exide site property line in all directions. Discrete receptors were used for the locations of the existing ambient air monitoring stations. Additional receptors with 25-meter spacing were located in the vicinity of the Eubanks monitor. The receptor representing the location of the Eubanks monitor has historically been the location of the maximum predicted concentration of lead. Graphical representations of the receptor grids are depicted in Figure 3-2: *Graphical Representation of Receptor Grid Showing Full Grid* and Figure 3-3: *Graphical Representation of Receptor Grid Showing Refined Grid*.

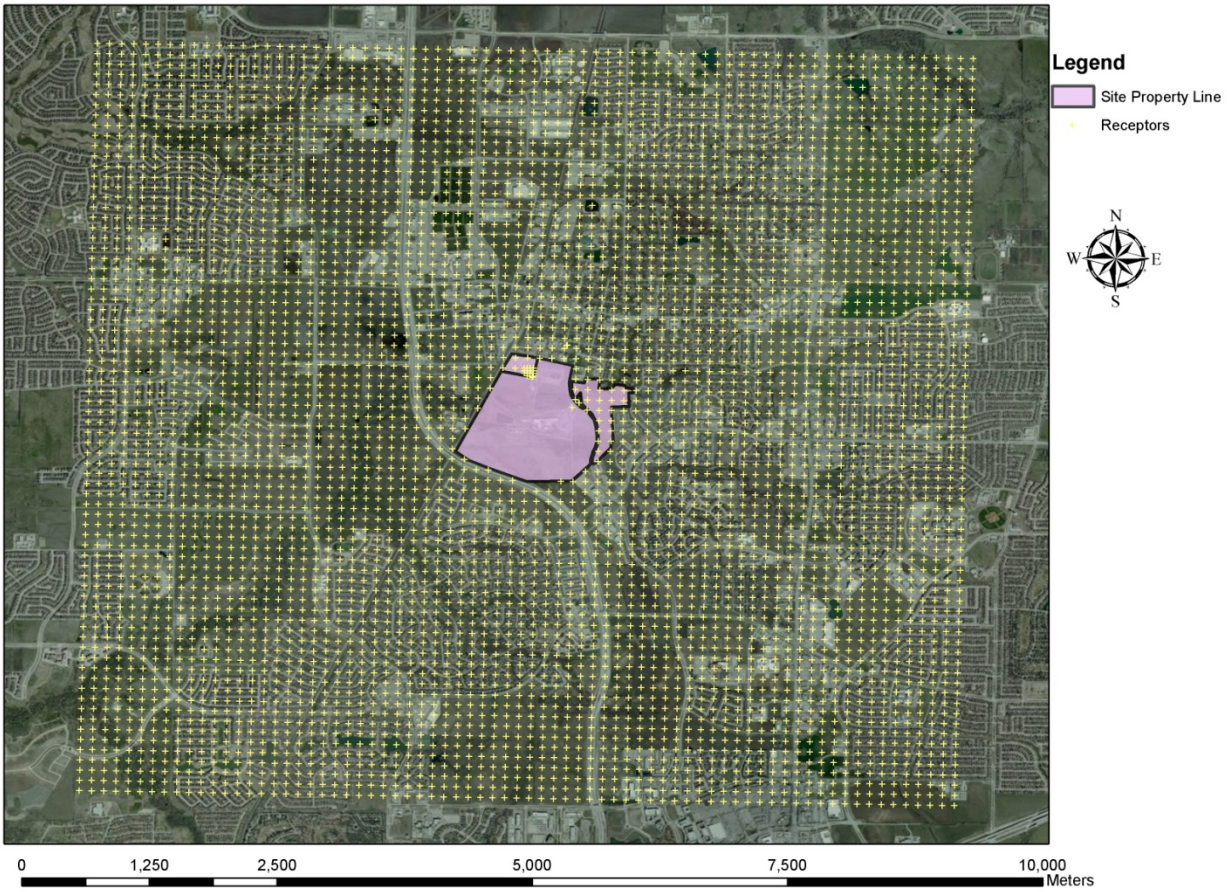

Figure 3-2: Graphical Representation of Receptor Grid Showing Full Grid

Figure 3-3: Graphical Representation of Receptor Grid Showing Refined Grid

3.4 SOURCE INPUT DATA

3.4.1 Source and Building Configuration

The sources modeled are listed in Table 3-2: *List of Sources Modeled*. This list represents all emission sources from Emission Point Numbers (EPN) of lead and lead compounds at the Exide site.

Table 3-2: List of Sources Modeled

EPN	Source Name	Permit Authorization
10A	Blast Furnace Fugitive Baghouse Stack	1147A
18	Hard lead Ventilation Baghouse Stack	1147A
21	Soft Lead Refining and Feeder Dryer	1147A
22	Specialty Alloy Baghouse Stack	1147A
23	Refining Building Vacuum Stack	1147A
35A	RF Refining Casting Fugitive Baghouse Stack	1147A
37	Reverberatory/Blast Furnaces Fugitive Baghouse Stack	1147A
38	Reverberatory/Blast Furnaces Metallurgical Scrubber Stack	1147A

EPN	Source Name	Permit Authorization
39A	Slag Treatment Baghouse	1147A
45	Raw Material Storage Shredder Baghouse Stack	1147A
48	Battery Breaker Scrubber Stack	1147A
48A	Battery Breaker Enclosure Baghouse Stack	1147A
ROAD	Vehicle Traffic	1147A
BUILDFUG	Total Enclosure Fugitives	1147A
OCS	Consolidated Stack For Oxide Sources	3048A
27	West Truck Loading Fugitive	3048A
28	East Truck Loading Fugitive	3048A

The stack parameters for point sources and area sources are listed in Table 3-3: *Point Sources and Associated Parameters* and Table 3-4: *Area Sources and Associated Parameters*. The locations, elevations, and other parameters are those represented by Exide during their permit review.

Table 3-3: Point Sources and Associated Parameters

EPN	Easting (meters)	Northing (meters)	Elevation (meters)	Height (meters)	Temperature (Kelvins)	Velocity (meters/sec)	Diameter (meters)
18	702628.1	3668768	193.7	30.63	312.73	4.98	1.62
21	702626.9	3668739	193.6	31.24	310.74	18.08	1.52
22	702685.7	3668804	194.6	22.86	304.17	15.05	0.81
23	702637.4	3668765	193.8	7.7	351.3	14.19	0.18
37	702682.6	3668810	194.6	22.86	309.45	19.15	1.68
38	702620.2	3668772	193.7	50.29	315.25	15.94	1.37
39A	702672	3668836	194.6	30.48	0	23.64	1.37
45	702623.1	3668714	193.5	32.16	303.1	12.92	1.8
48	702585	3668771	193.4	15.77	0	12.28	1.01
48A	702593	3668828	193.5	30.48	0	22.96	1.98
10A	702686	3668817	194.7	30.48	0	22.96	1.98
35A	702715	3668841	195.2	30.48	0	22.96	1.98
OCS	702728	3668827	195.4	30.48	360.93	19.72	0.99

Table 3-4: Area Sources and Associated Parameters

EPN	Easting (meters)	Northing (meters)	Elevation (meters)	Height (meters)	E-W Length (meters)	N-S Length (meters)	Rotation (degrees)
BUILDFUG	702550.1	3668758.5	193.19	2.0	214	57	-2
27	702733.8	3668768	194.8	4.57	0.91	0.91	0
28	702756.3	3668782	195.4	4.57	0.91	0.91	0

EPN	Easting (meters)	Northing (meters)	Elevation (meters)	Height (meters)	E-W Length (meters)	N-S Length (meters)	Rotation (degrees)
ROAD	702532	3668809	193	1	NA	NA	NA

The dimensions of the modeled area sources are representative of the actual areas where the emissions are generated. The height of release for sources 27 and 28 is based on the height where the emissions escape a structure. The source ROAD is represented as an AREAPOLY source with 18 vertices. The source location encompasses the area where truck and vehicle traffic would occur. The release height for source ROAD was set to 1 meter, which is a reasonable release height for road generated emissions.

The source BUILDFUG is represented as a rectangular area source having the approximate size and extent of the process area at the Exide site. The height of this source is represented as 2 meters, as this measurement is approximately half the eve height of the shortest building structure in the process area. This source representation is conservative since the emissions are treated as occurring continuously and transported by the wind unobstructed by physical barriers. In reality, the fugitive emissions will be occurring sporadically and be transported around building structures by the wind. This area source characterization is consistent with fugitive emission representation in the protectiveness analysis of the secondary lead smelter maximum achievable control technology.

For the graphical representation depicting source locations and building configuration, refer to Figure 3-4: *Graphical Representation of Modeled Emission Source Locations and Building Configuration*.

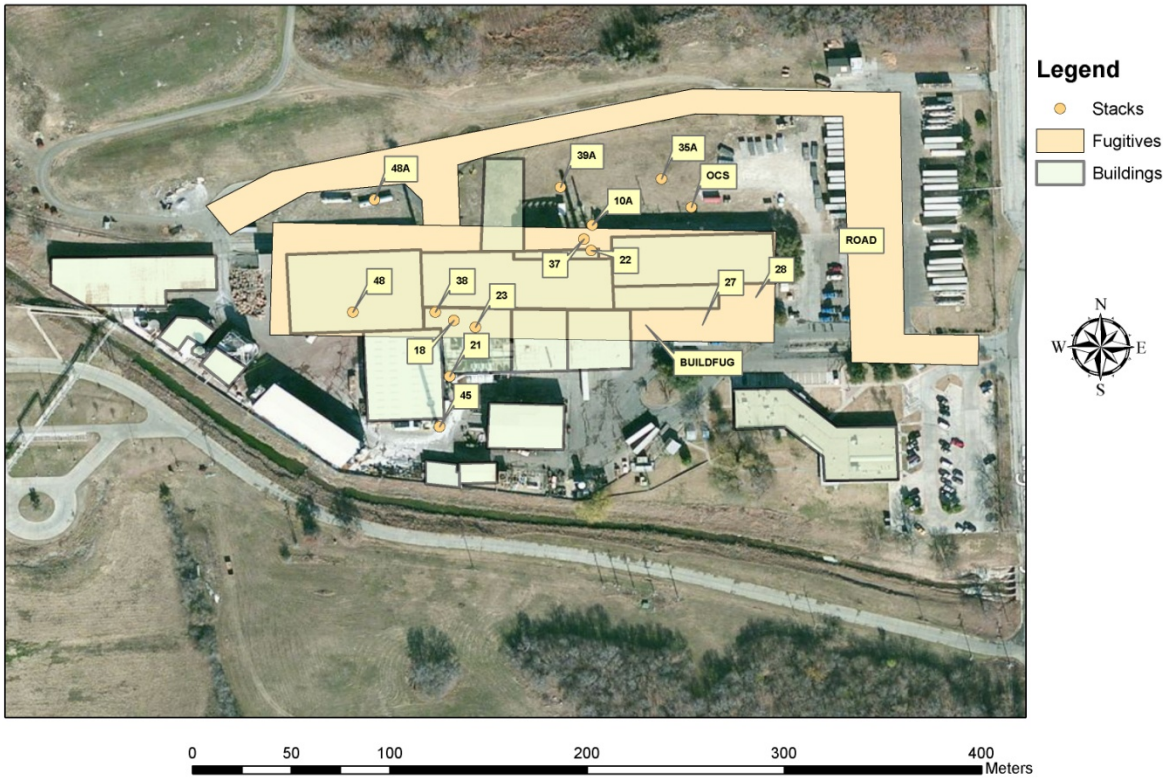

Figure 3-4: Graphical Representation of Modeled Emission Source Locations and Building Configuration

3.4.2 Emissions Inventory

The emission rates modeled are the allowable emission rates represented in permits 1147A and 3048A. For this demonstration of compliance with the lead NAAQS, the maximum hourly emission rates were modeled. The model treats all sources as emitting the maximum rate simultaneously every hour. Given that the form of the lead NAAQS is a rolling three-month average concentration, modeling maximum hourly emission rates is extremely conservative, predicting a higher concentration than would be actually monitored, due to the variability of actual emission rates and the fact that not all sources operate at the same time. The aggregate maximum hourly lead emission rate for all the stack sources is limited to 0.4517 pound per hour. Individual emission rates by source can be found in TCEQ permit numbers 1147A and 3048A.

3.4.3 Background Sources

A background concentration was developed consistent with 40 Code of Federal Regulations (CFR) 51 Appendix W Chapter 8.2.2. The mean background concentration was determined at each monitor by excluding values when the source in question is impacting the monitor.

Exide is a significant contributor of lead emissions. Four lead ambient air monitors currently collect 24-hour lead concentration samples around the Exide site. Three of the four current lead monitors (Ash Street, Parkwood Street, and Stonebrook) were used to calculate the lead background concentrations due to their upwind location from Exide when the wind is blowing away from the Exide site. Because there was only one year of valid data available at the Stonebrook monitor, the deactivated Gould National Battery monitor (operational from 1993 through 1996) was also used in the background analysis. Use of the Gould National Battery monitor gives a total of four years of data and data from that monitor is comparable because trends investigated from previous years determined no increases or decreases in overall lead concentration trends at that monitor. The Ash Street and the Parkwood Street monitors were used to determine background lead concentrations from the north and east directions from 2006 through 2010. The Stonebrook and Gould National Battery monitors determined background lead concentrations when air was incoming from the southern direction. All four monitors fit the recommendations from EPA 40 CFR 51 Chapter 8.2.2. The location of each monitor as well as the location of Exide are displayed in Figure 3-5: *Lead Background Monitors around Exide Technologies*.

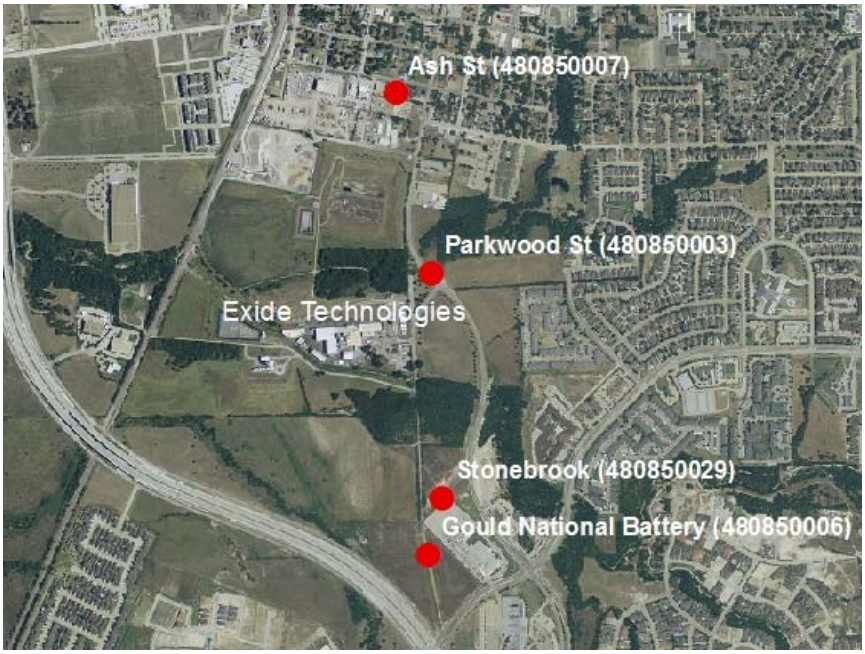

Figure 3-5: Lead Background Monitors around Exide Technologies

Lead sampling data were used to determine the 24-hour lead concentrations. Because no meteorological data was available at the Ash Street, the Parkwood Street, the Gould National Battery, or the Stonebrook monitors, hourly wind data was taken from the Frisco CAMS 31 monitor. For the Stonebrook monitor, wind data from Frisco Eubanks CAMS 1010 was used for dates after June 08, 2011. Wind direction windows, shown in Table 3-5: *Wind Direction Windows in Frisco Monitors*, of either 0 through 90 degrees, 0 through 120 degrees, 45 through 270 degrees, or 270 through 359 degrees were assigned, depending on the monitoring location, to define the monitor to be upwind from the isolated source. Only wind speeds 2 miles per hour (mph) and above were considered due to higher wind speeds yielding better wind direction estimates.

Table 3-5: Wind Direction Windows in Frisco Monitors

Monitor	AIRS Number	Wind Direction (degrees)	Years
Gould National Battery	480850006	45-270	1993-1996
Stonebrook	480850029	45-270	2011
Ash Street	480850007	270-360, 0-90	2006-2010
Parkwood Street	480850003	0-120	2006-2010

The 24-hour lead concentrations that met the above requirements for a 24-hour period were considered background lead concentrations. Those lead concentrations were then averaged to give a lead background level that represents the air coming from the restricted direction, as shown in Table 3-6: *Background Lead Concentrations by Monitor*.

Table 3-6: Background Lead Concentrations by Monitor

Monitor	AIRS Number	Number of Restricted Days	Mean Lead Background (µg/m3)
Gould National Battery	480850006	76	0.026
Stonebrook	480850029	20	0.032
Ash Street	480850007	32	0.021
Parkwood Street	480850003	7	0.066

A weighted average of the four lead background concentrations was calculated. Consistent with guidance from Appendix W of 40 CFR 51, calculation of the weighted average uses air quality data collected in the vicinity of the source, excludes values when the source is impacting the monitor, and then determines the background by taking the average of the annual lead concentrations at each monitor. The weighted average gives more weight to monitors with more data. This weighting is important because several local monitors have only been in operation for a short period of time. The weighted average also includes potential unknown lead sources in the lead background concentration. The weighted average uses monitoring data from the Gould National Battery (deactivated at the end of 1996), Stonebrook, Ash Street, and Parkwood Street monitors.

The weighted average was calculated by multiplying the number of restricted days by the background mean at each monitor, then dividing the total number of days. The calculated weighted average, rounded to three decimal points, is 0.028µg/m^3 (refer to Table 3-7: *Frisco Lead Background Concentration by Weighted Average*).

Table 3-7: Frisco Lead Background Concentration by Weighted Average

Monitor	Number of Restricted Days	(Restricted x Mean) / Total
Gould National Battery	76	0.014666667
Stonebrook	20	0.004716593
Ash Street	32	0.005040000
Parkwood Street	7	0.003427407
	Calculated Weighted Average (µg/m^3)	**0.027850667**
	Calculated Weighted Average (µg/m^3), Rounded	**0.028**

The methodology used in the analysis follows recommendations made by the EPA for isolated sources. The weighted average of 0.028 µg/m^3 best represents the 24-hour lead background concentration entering into the Exide battery recycling plant area.

3.5 MODELING RESULTS

The maximum predicted three-month rolling concentration was 0.1198 µg/m^3. The maximum predicted concentration occurred at the receptor representing the location of the Eubanks monitor, which is at the fence line on the northern Exide property line. With a background concentration of 0.028 µg/m^3, the overall maximum predicted three-month rolling concentration is 0.1478 µg/m^3. Since the maximum predicted three-month rolling concentration is less than 0.15 µg/m^3, attainment of the 2008 lead NAAQS is expected based upon implementation of emission controls included in Appendix A: *Agreed Order 2011-0521-MIS.* Figure 3-6: *Graphical Representation of Location of Maximum Predicted Concentration, Wide View* and Figure 3-7: *Graphical Representation of Location of Maximum Predicted Concentration, Zoomed in Near Eubanks Monitor* depict the magnitude and location of maximum predicted lead concentrations.

Additionally, a few emission control measures were not taken into consideration for the modeling analysis. These include the following:

- Replacement of bag media, with polytetrafluoroethylene (PTFE) membrane media, in sources 18, 22, 23, and 37. This change would reduce emissions from these sources due to improved collection of particulate matter;

- Replacement of tube sheeting in sources 18, 21, 22, 23, 37, and 39. This change would reduce emissions from these sources due improved collection of particulate matter; and

- Installation of secondary high efficiency particulate air (HEPA) filtration on all baghouses that receive lead emissions (sources 11 through 18, 21 through 26, 37, and 39) except for the reverbatory and blast furnace baghouse (source 38).

Because these measures were not accounted for in the attainment demonstration modeling, the overall maximum predicted three-month rolling concentration of 0.1478 µg/m^3 is expected to be conservative.

Figure 3-6: Graphical Representation of Location of Maximum Predicted Concentration, Wide View

Figure 3-7: Graphical Representation of Location of Maximum Predicted Concentration, Zoomed in Near Eubanks Monitor

3.6 REFERENCES

1. "ADEC Guidance re AERMET Geometric Means, How to Calculate the Geometric Mean Bowen Ratio and the Inverse-Distance Weighted Geometric Mean Surface Roughness Length in Alaska," Alaska Department of Environmental Conservation, Revised June 17, 2009.
2. "AERSURFACE User's Guide", EPA-454/B-08-001, United States Environmental Protection Agency, Office of Air Quality Planning and Standards, Air Quality Assessment Division, Air Quality Modeling Group, Research Triangle Park, North Carolina, January 2008.
3. "NLCD 1992/2001 Retrofit Land Cover Change Product", website http://www.mrlc.gov/multizone.php, U.S. Department of the Interior, U.S. Geological Survey, February 25, 2008.

CHAPTER 4: CONTROL STRATEGY AND REQUIRED ELEMENTS

4.1 INTRODUCTION

The Collin County nonattainment area for the 2008 lead National Ambient Air Quality Standard (NAAQS) consists of a 1.28 square mile area surrounding the Exide Technologies (Exide) lead-acid battery recycling operations in Frisco, Texas. Exide is a significant contributor to ambient air lead emissions in the area. In addition to permit numbers 1147A and 3048A held by Exide for the secondary lead smelting and lead oxide operations at the lead-acid battery recycling facility, the Texas Commission on Environmental Quality (TCEQ) has made control measures and contingency measures enforceable through agreed orders adopted as part of the 1993 lead state implementation plan (SIP) for Collin County, the 1999 Collin County Redesignation and Maintenance Plan for Lead, and the 2009 Collin County Maintenance Plan for Lead. This chapter describes existing lead emission control measures in place at Exide, control measures implemented as part of the Agreed Order associated with this SIP revision (Agreed Order 2011-0521-MIS), as well as how Texas meets the lead nonattainment area SIP requirements of reasonably available control technology (RACT), reasonably available control measures (RACM), and contingency measures.

4.2 EXISTING CONTROL MEASURES

Title 30 Texas Administrative Code (TAC) Chapter 113 previously incorporated the existing federal regulations for control of hazardous air pollutants (HAP) from lead smelting facilities that include the National Emission Standards for Hazardous Air Pollutants (NESHAP) from Secondary Lead Smelting (40 Code of Federal Regulations (CFR) Part 63, Subpart X). The United States Environmental Protection Agency (EPA) published a final revision to NESHAP for secondary lead smelting in the January 5, 2012, issue of the *Federal Register* (77 FR 556). In addition, Texas has maintained enforceable control measures for Exide through a series of agreed orders for the facility. Prior to being operated by Exide, the secondary lead smelter and battery recycling facility in Frisco, Texas, was operated by Gould National Battery, Inc., and by GNB Technologies, Inc. (GNB). In 1992, GNB entered into Agreed Board Order 92-09(k) with the Texas Air Control Board (TACB), a predecessor agency to the TCEQ, and special provisions were included in amendments to Air Quality Permits R-1147A and R-5466D to ensure maintenance of the 1978 lead NAAQS and to resolve notices of violations regarding exceedances of the 1978 lead NAAQS.

GNB subsequently amended Air Quality Permits 1147A and was issued a new permit number 3048A to incorporate provisions in Agreed Board Order 92-09(k) (Order 92-09k) as permanent and enforceable control measures. The maximum allowable lead emission rate in these permits limited lead emissions to 4.27 tons per year (tpy). In 1993, GNB entered into Agreed Board Order 93-12 (Order 93-12) with the TACB to establish contingency measures related to the 1993 Lead SIP for Collin County.

As part of the 1999 Collin County Redesignation and Maintenance Plan for Lead, GNB entered into Agreed Order 99-0351-SIP, which terminated Orders 93-12 and 92-09(k); however, GNB agreed to continue implementation of these measures or to implement additional measures or control technologies proposed by GNB that were judged by the TCEQ executive director to be similarly effective in controlling lead emissions from the plant. Exide acquired the GNB plant in Collin County in 2000.

The state maintained permanence of the earlier reductions through Agreed Order 2009-0071-MIS, in which Exide agreed to abide by representations made by GNB to continue implementation of the requirements of paragraph eight in Order 92-09(k) as incorporated in permits 1147A and 3048A or to implement additional proposed measures or control

technologies judged by the executive director to be similarly effective in controlling lead emissions from the plant.

In 2009, Exide entered into Agreed Order 2009-0071-MIS as part of the second ten-year maintenance plan for the 1978 lead NAAQS. As part of that agreed order, Exide agreed to continue implementation of measures previously implemented. Exide also agreed to maintain records for the period of the second ten-year maintenance plan (2009 through 2019) and make those records available upon request by the TCEQ or any other air pollution control agency with jurisdiction.

Below is a list of the existing control measures and restrictions applicable to the Collin County lead nonattainment area under Agreed Order 2009-0071-MIS:

- addition of a supplemental ventilation baghouse to the reverberatory and blast furnace metallurgical operations area;
- installation of covers over blast furnace bins and water spray system over the bin area;
- installation of a baghouse and supporting ventilation and ducting at the raw materials storage building;
- installation of a feed dryer and baghouse at the reverberatory furnace charging area to reduce the possibility of reverberatory furnace explosions due to wet feed;
- development and implementation of a detailed site operation and maintenance plan for all site baghouse operations;
- installation of a Tri-bo Flow® System in all baghouse ducts to detect upset emissions;
- maintenance of compliance with all emission limits and standard operating procedures for process sources, process fugitive sources, and fugitive dust sources from the National Emissions Standards for Hazardous Air Pollutants from Secondary Lead Smelters under 40 CFR Part 63 Subpart X;
- maintenance of records from the second (2009) maintenance plan sufficient to demonstrate compliance with control measures and requirements under the agreed orders;
- restrictions on any increase in actual emissions above 4.27 tpy and approved amendments to permits 1147A and 3048A or through the issuance of a new permit pursuant to 30 TAC Chapter 116, along with executive director approved dispersion modeling demonstrating that such an increase will not cause a violation of the 1978 lead NAAQS; and
- continue to maintain all air pollution control and monitoring equipment in good working order and operate properly during normal operation.

In addition to the above control measures, Agreed Order 2009-0071-MIS includes contingency measures to be implemented in the event that an exceedance of the 1978 lead NAAQS is measured at any TCEQ ambient air quality monitoring site in Collin County or Exide reports an exceedance of 4.27 tpy in the annual emissions inventory and that exceedance of 4.27 tpy was not the result of a permitted increase in lead emissions. If at any time during the second 10-year maintenance period one of the above exceedances occurs, Exide will implement one of the following contingency measures within 180 days of notification by the executive director:

- automation of the scale and feed for the reverberatory furnace;
- installation of water misting dust suppression system beyond the system already required under permit 1147A; or
- an alternative measure proposed by Exide that results in emission reductions which, at a minimum, must be equivalent to the emissions reductions achievable by the above contingency measures and approved by the executive director.

4.3 RACT AND RACM ANALYSIS

4.3.1 General Discussion

As discussed in the lead NAAQS final rule published in the November 12, 2008, issue of the *Federal Register* (73 FR 67035), states containing areas designated as nonattainment are required to submit a SIP revision demonstrating that the associated enforceable control measures fulfill the RACT and RACM requirements for sources of ambient lead concentrations.

In the September 17, 1979, issue of the *Federal Register* (44 FR 53762) RACT is defined as "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." Section 172(c)(1) of the Federal Clean Air Act (FCAA) requires states to provide for implementation of all RACM, including RACT, as expeditiously as practicable. In the General Preamble for implementation of the FCAA Amendments, published in the April 16, 1992, issue of the *Federal Register* (57 FR 13498), the EPA explains that it interprets §172(c)(1) of the FCAA as a requirement that states incorporate into their SIP all RACM that would advance a region's attainment date. However, regions are obligated to adopt only those measures that are reasonably available for implementation considering local circumstances. In the preamble for the lead NAAQS final rule (73 FR 67035, November 12, 2008), the EPA provided guidelines to help states determine which measures should be considered reasonably available.

> If it can be shown that measures, considered both individually as well as in a group, are unreasonable because emissions from the affected sources are insignificant (i.e., de minimis), than the measures may be excluded from further consideration…the resulting control measures should then be evaluated for reasonableness, considering their technological feasibility and the cost of control in the area to which the SIP applies…In the case of public sector sources and control measures, this evaluation should consider the impact of the reasonableness of the measures on the municipal, or other governmental entity that must assume the responsibility for their implementation.

In addition to these criteria, the TCEQ also considered whether the control measure was similar or identical to control measures already in place at Exide. If the suggested control measure would not provide substantive and quantifiable benefit over the existing control measure, then the suggested control measure was not considered RACM because comparable controls were already in place.

The TCEQ developed a comprehensive list of potential control strategies to evaluate during the RACM and RACT analysis. First, the TCEQ developed a draft list of potential control strategy concepts based on an evaluation of the existing point and fugitive sources of lead at Exide. The draft list of potential control strategy concepts was presented to stakeholders for comment at a stakeholder meetings held in Frisco, Texas, on January 19, 2011. The TCEQ requested comment on the potential control strategies and invited stakeholders to suggest any additional strategies that might help advance attainment of the Collin County nonattainment area. The final list of potential control strategy concepts for the RACM and RACT analysis includes the strategies presented to stakeholders and the strategies suggested by stakeholders during the informal stakeholder comment process. The final list of potential control strategy concepts for the RACM and RACT analysis also includes control measures proposed or implemented at similar secondary lead smelting facilities in other states. The TCEQ evaluated existing and proposed control measures at similar facilities including the Exide Technologies facility in Vernon, California; the RSR Quemetco facility in City of Industry, California; Gopher Resources in

Eagan, Minnesota; Exide Technologies in Muncie, Indiana; and the Envirofocus facility in Tampa, Florida. The TCEQ also evaluated the control measures required in the South Coast Air Quality Management District Rule 1420.1, *Emissions Standard for Lead from Large Lead-Acid Battery Recycling Facilities*. In support of the Agreed Order and SIP revision, the TCEQ commissioned third-party contractor Eastern Research Group, Inc. (ERG) to evaluate available control measures and work practices to reduce lead emissions from point sources and fugitive lead-dust emissions at lead-acid battery recycling operations with secondary lead smelters and lead oxide facilities. On April 25, 2011, ERG submitted their report, *Comprehensive Evaluation of Air Quality Control Technologies used for Lead-Acid Battery Recycling* (http://www.tceq.texas.gov/airquality/sip/stakeholders/pb_stakeholder). The final list of potential control strategy concepts for the RACM and RACT analysis includes control technologies and measures recommended in the ERG report. Please see Appendix F: *Reasonably Available Control Measure (RACM) and Reasonably Available Control Technology (RACT) Analysis* for a complete list of control measures evaluated during the RACM and RACT analysis.

4.3.2 Results of RACT and RACM Analysis

Each potential control measure identified through the control strategy development process was evaluated to determine if the measure would meet established criteria to be considered reasonably available. Please see Appendix F for a complete list of control measures and RACM and RACT determinations.

The TCEQ determined that full enclosures with negative pressure ventilation sufficient to ensure that area fugitive emissions are routed to a high efficiency control device is RACM and RACT for Exide's secondary lead smelting operations, including battery breaking operations, blast and reverberatory furnaces, refining and casting operations, slag treatment and fixation, and raw materials storage and handling areas. In most cases, the high efficiency control device is a polytetrafluoroethylene (PTFE) membrane baghouse; however, for some operations, high efficiency cartridge filters are used instead of high efficiency PTFE membrane baghouses. Due to equivalent control efficiencies, cartridge filters used in place of PTFE membrane baghouses are considered RACM and RACT.

The TCEQ determined the following operational work practices and housekeeping requirements that minimize fugitive lead-dust emissions to the ambient air are RACM and RACT: traffic plans for materials loading and unloading; traffic plans that avoid areas with the potential to create fugitive lead-dust; inspection and removal of leaking lead-acid batteries upon delivery; and the cleaning of equipment that is contaminated with lead inside of a permanent total enclosure prior to moving such equipment to a maintenance building.

The TCEQ determined that wet scrubbers for battery breaker operations stacks and metallurgical scrubbers for furnace operations stacks with high efficiency PTFE membrane baghouses are RACM and RACT.

The TCEQ determined that partial enclosure with negative pressure hooding and ducting to high efficiency PTFE membrane baghouses of lead oxide operations areas is RACM and RACT.

The TCEQ determined that the installation of wet electrostatic precipitator (WESP) control technology is not RACM or RACT for the Exide facility in Collin County, because it is not economically feasible given the estimated emission reductions. In the recently promulgated revisions to the NESHAP from Secondary Lead Smelting in 40 CFR Part 63, Subpart X, the EPA stated that adding WESP technology as supplementary control for hazardous air pollutants

(HAP) metal is excessively costly and not cost effective (76 FR 29058). According to the supporting documentation, the cost effectiveness of installing WESP technology at all secondary lead smelting facilities is an estimated $2.37 million per ton of HAP (Docket No. EPA-HQ-OAR-2011-0344-0155). In comparison, the cost effectiveness of complying with all of the newly promulgated NESHAP requirements is an estimated $0.33 million per ton of HAP (Docket No. EPA-HQ-OAR-2011-0344-0155). Agreed Order 2011-0521-MIS requires Exide to install high efficiency particulate air (HEPA) filters as secondary lead control devices. HEPA filters have a minimum 99.97% control efficiency for the removal of particles with a diameter of at least 0.3 micrometre. According to the EPA's Air Pollution Control Technology Fact Sheets (EPA-452/F-03-023), the capital cost for a HEPA filter is $6,400 to $8,500 per standard cubic meter per second (scm/sec) or $3 to $4 per standard cubic feet per minute (scfm). According to the EPA's Air Pollution Control Technology Fact Sheets (EPA-452/F-03-030 and EPA-452/F-03-023), the control efficiency of a typical new WESP design is between 99% and 99.9%, and the capital cost is $42,000 to $85,000 per scm/sec or $20 to $40 per scfm, which is roughly ten times the capital cost of a HEPA filter. The HEPA filter provides equivalent control efficiency at a much lower cost than a WESP.

WESP has been installed at one secondary lead smelting operation in California to comply with the AB2588 Toxics Hot Spots program, a unique regulatory requirement that specifically addresses cancer risk from arsenic and other heavy metal emissions. The facility in California selected WESP technology as a secondary pollution control device installed after the baghouse to further reduce arsenic emissions from the secondary lead smelting operation. In this case, WESP technology may be reasonable for facilities that operate electric arc furnaces (EAF) as part of the secondary lead smelting process. EAF operates at much higher temperatures (2500 - 3000 degrees Fahrenheit) than the blast furnaces used at Exide in Frisco. This higher heat volatilizes compounds such as arsenic and other heavy metals, which makes the particles more difficult to remove using a dry filtration device, such as a baghouse or secondary HEPA filter. Arsenic and other heavy metals such as lead are not volatilized in secondary lead smelting operations using blast and reverberatory furnaces, such as those used at Exide in Frisco. There is not sufficient information to substantiate that WESP is reasonable for secondary lead smelting facilities using blast and reverberatory furnaces at the additional cost of $16 to $40 million at each secondary lead smelter when the HEPA filter provides equivalent control efficiency at a much lower cost.

In addition, installing a WESP at Exide for process emission control will have limited benefit because the vast majority of Exide's lead emissions are from fugitive sources. Air dispersion modeling conducted for this SIP revision demonstrates that with the controls in Agreed Order 2011-0521-MIS, the ambient lead concentration in the Collin County lead nonattainment area will be below the 2008 lead NAAQS by the December 31, 2015, attainment date. Because the lead emissions that will remain after Exide has installed and is operating all the required controls included in the Agreed Order are sufficient for Collin County to demonstrate attainment of the 2008 lead NAAQS, it is unnecessary for a lower lead emission limit to be imposed on Exide.

The TCEQ determined that full enclosure of lead oxide operations in conjunction with negative ventilation sufficient to ensure that area fugitives are routed to a high efficiency control device is not RACM or RACT, because it is not economically feasible. Full enclosure of lead oxide operations is included as a contingency measure in Agreed Order 2011-0521-MIS to be triggered in the event that quality assured data shows an exceedance of the 0.15 microgram per cubic meter ($\mu g/m^3$) lead NAAQS measured as a rolling three-month average at any TCEQ ambient air quality lead monitoring site in Collin County.

The TCEQ determined that the installation of HEPA filters as secondary controls in addition to high efficiency PTFE membrane baghouses is not RACT or RACM. The estimated cost per ton of lead emission reductions associated with the secondary HEPA filters is not reasonable when compared to the lead emission reductions achieved from the high efficiency PTFE baghouses used alone. Agreed Order 2011-0521-MIS requires the installation of secondary HEPA filters where possible in addition to the high efficiency PTFE baghouses. This control measure is included in Agreed Order 2011-0521-MIS, but is beyond RACM and RACT.

The TCEQ determined that the replacement of the hydraulic ram with a rotary screw feeder for the reverberatory furnace charging process is not RACM or RACT because it is not economically feasible given the estimated emission reductions. In addition, any emissions associated with this source will be controlled through the furnace area enclosure. This control measure is included in Agreed Order 2011-0521-MIS, but is beyond RACM and RACT.

4.4 NEW CONTROL MEASURES

The new control measures needed to demonstrate attainment for the 2008 lead NAAQS in the Collin County nonattainment area are made enforceable by Agreed Order 2011-0521-MIS. Agreed Order 2011-0521-MIS includes the control measures for attainment and the associated implementation schedule. Agreed Order 2011-0521-MIS also includes contingency measures to be triggered in the event of an exceedance "condition" (as defined in Agreed Order Paragraph 10) of the 2008 lead NAAQS.

The following control measures have already been implemented as part of Agreed Order 2011-0521-MIS. The Agreed Order requires Exide to continue to maintain and operate these measures so long as the plant continues manufacturing operations.

- Exide retrofitted baghouses (Permit 1147A Emission Point Numbers (EPNs) 18, 21, 22, 23, 37, and 38) by replacing all bags with PTFE membrane media and replacing all of the baghouse tube sheets with improved seating design.
- Exide replaced the existing seals on the blast furnace "doghouse" emissions capture and ventilation hooding system (Facility Identification Number (FIN) 10).
- Exide replaced the reverberatory furnace (FIN 35) hydraulic ram feeder with a screw conveyor.
- Exide installed a non-fouling area misting system in the blast and reverberatory furnace areas (FIN 10 and 35). Exide will continue operating this system until the blast and reverberatory furnace area, including the refining/casting/charging area is fully enclosed and placed under negative pressure and secondary HEPA filtration has been installed, as required in Agreed Order 2011-0521-MIS.
- Exide will continue to maintain all air pollution abatement equipment in good working order and operate it properly during normal operations.

The following control measures will be implemented as part of Agreed Order 2011-0521-MIS, so long as the plant continues manufacturing operations.

- Exide will inspect any batteries that are not stored in a total enclosure once each week and move any broken batteries to the battery breaking area for processing or move them to a total enclosure, within 72 hours of identification. Exide must clean residue from broken batteries within 72 hours of identification. This measure will be implemented on May 30, 2012. Exide will replace existing roll-up doors with fabric roll-up doors in the raw material storage building. Existing roll-up doors at openings without truck docks in the raw material

storage building must be replaced with high-speed fabric roll-up doors. This measure will be implemented as expeditiously as possible, but no later than November 1, 2012.

- If Exide does not complete any of the control measures specified in Agreed Order Paragraphs 21, 22, 26, or 27 before November 1, 2012, the following interim measures will be implemented by November 15, 2012: install dock seals at existing truck docks to help minimize fugitive emissions; and change baghouse cleaning cycle controls from time-based to pressure-drop demand based cycles to allow for increased filter cake on bags.
- By July 31, 2012, to the extent that no building permits are needed to conduct repairs, the raw material storage building must be free of significant cracks, gaps, corrosion, or other deterioration that could cause lead bearing material to be released from the building. After July 31, 2012, the raw material storage building will follow the inspection requirements of 40 CFR § 63.544(d), as promulgated on January 5, 2012.
- Exide will construct a new slag treatment building adjacent to the furnace and refining operations to reduce fugitive emissions associated with truck traffic. The new slag treatment building will be fully enclosed and placed under negative pressure ventilation. Once the new slag treatment building is constructed and operational, the old slag treatment building (FIN 39) will no longer be used for activities involving processing or handling lead bearing materials unless the building is fully enclosed and placed under negative pressure ventilation sufficient to ensure that fugitive emissions are routed to a baghouse. This measure will be implemented as expeditiously as possible, but no later than January 6, 2014.
- Exide will fully enclose and place under negative pressure ventilation the following buildings/areas: the blast and reverberatory furnace area, including the refining/casting/charging area (FINs 10, 35, 36, and 37), the new slag treatment building (FIN 39A), the battery breaker area (FIN 48A), and the raw material storage area (FIN 45). This will include the full enclosure of the buildings/areas, the installation of negative pressure ventilation sufficient to ensure that the buildings/areas fugitives emissions are routed to new baghouses or existing baghouses, the installation of new point sources, and installation of new baghouses with PTFE filter media and improved seating design bags, or equivalent or superior design if approved by the TCEQ. Total enclosures must be ventilated continuously whenever equipment and processes with the potential to generate fugitive lead emissions are occurring within the enclosure. The ventilation must ensure negative pressure values of at least 0.013 millimeter of mercury (0.007 inches of water) consistent with the requirements of 40 CFR §63.544(c)(1), as promulgated on January 5, 2012. This measure will be implemented as expeditiously as possible, but no later than January 6, 2014.
- Exide will operate under a traffic plan for trucks unloading batteries at the facility and for traffic to, from, and across the on-site landfill. Exide will relocate the spent battery loading docks to the north side of the battery breaker operation and reconfigure the traffic route such that the spent battery delivery trucks enter and leave along the north route and never enter the center of the facility. Traffic excluded from this plan includes chemical delivery trucks, plant service vehicles, and other scrap delivery vehicles. This measure will be implemented as expeditiously as possible, but no later than January 6, 2014.
- Exide will fence the property boundaries of the plant property to deter trespassers. On the south and west property boundaries, Exide will install a wire fence at least 48 inches high with mesh spacing approximately 2 inches by 4 inches topped by a strand of barbed wire for a total fence height of approximately 54 inches. The railroad tracks on the west side will be gated at the fence boundary. On the east boundary, Exide will install monitors to detect unlawful ingress onto Exide's property across the existing board fence. Exide will also install a camera to monitor the plant entrance for trespassers. This measure will be implemented as expeditiously as possible, but no later than January 6, 2014.
- Exide will install secondary HEPA filtration on all baghouses that receive lead emissions (EPNs OCS, 10A, 18, 21, 22, 23, 35A, 37, 39A, 45, and 48A) except for the reverberatory

furnace baghouse and the blast furnace baghouse (EPN 38). All HEPA filters must be rated by the manufacturer to achieve a minimum of 99.97% capture efficiency for particles 0.3 micrometre or larger. Exide will evaluate the technical feasibility of installing secondary HEPA filtration on the reverberatory furnace baghouse and the blast furnace baghouse, and, if technically feasible, will also install secondary HEPA filtration on these two baghouses. If HEPA filtration is not technically feasible for these two baghouses, Exide will install high efficiency PTFE secondary filtration devices. This measure will be implemented as expeditiously as possible, but no later than January 6, 2014.

- Process or mobile equipment that is contaminated with lead will be initially cleaned inside of a permanent total enclosure prior to being moved to the maintenance building. This measure will be implemented as expeditiously as possible, but no later than January 6, 2014.
- After implementation of the controls required by Paragraphs 15 to 27 of this Agreed Order, Exide will emit no more than a maximum of 0.4517 pound per hour (lb/hr) of lead from stack sources. Air dispersion modeling completed for this SIP revision indicates that 0.4517 lb/hr of lead is the maximum that Exide can emit without causing or contributing to an exceedance of the 2008 lead NAAQS.

As an alternative to completing the measures listed in the previous paragraphs, Exide may shut down the plant and cease all manufacturing operations. If Exide chooses this alternative, Exide must notify the Executive Director of its election of this alternative by November 1, 2012, and identify a date for the permanent cessation of manufacturing operations. Unless extended pursuant to Paragraph 39, Exide's authorization to conduct manufacturing operations at the Plant shall terminate as of the date provided by Exide in its notice of shutdown. In no event will the shutdown occur later than January 6, 2014. Removal of equipment and demolition of buildings must be completed no later than one year after the date the permanent cessation of manufacturing operations occurs. During removal or demolition of equipment, Exide must continue to operate relevant baghouses and any other relevant control equipment to control lead emissions as long as practicable. Exide shall void each air quality permit within 60 days of completion of removal or demolition of all facilities (as designated by Emission Point Number) authorized by the permit. All air quality authorizations associated with the plant must be voided no later than December 31, 2015, other than any authorizations required for operation of the wastewater treatment plant.

The following contingency measures are included under Agreed Order Paragraph 10. The contingency measures would be triggered in the event that quality assured data shows an exceedance of the 0.15 $\mu g/m^3$ lead NAAQS measured as a rolling three-month average at any TCEQ ambient air quality lead monitoring site in Collin County. If the TCEQ provides notice of such an exceedance condition, Exide has the opportunity to submit to the TCEQ an affirmative demonstration that an identifiable problem involving existing operations is the root cause of the condition and a proposal for remedy and prevention of recurrence of the problem. If Exide does not submit this demonstration and proposal for correction within the allotted 30 days or the TCEQ disapproves of such submission within the allotted 45 days, the following contingency measures will be implemented as expeditiously as possible, but no later than 12 months after the TCEQ's notification of the condition.

- Exide will fully enclose the lead oxide operational area and install negative pressure ventilation, a new point source, and filtration media (either a baghouse or cartridge filter) (FIN 46). This will include the full enclosure of the lead oxide operational area, the installation of negative pressure ventilation sufficient to ensure that lead oxide operational area fugitives are routed to the new baghouse, the installation of a new point source, installation of a new baghouse with PTFE filter media and improved seating design bags, or

equivalent or superior design if approved by the TCEQ, and secondary HEPA filtration. All HEPA filters must be rated by the manufacturer to achieve a minimum of 99.97% capture efficiency for particles 0.3 micrometre or larger. The enclosure performance must be consistent with the requirements of 40 CFR §63.544(c) and §63.548(k), as promulgated on January 5, 2012.

- Exide will install and operate according to good engineering practices vacuum hooding over lead oxide loading operations (EPNs 27 and 28). The exhaust air from the vacuum hooding must be routed to an existing or new baghouse with PTFE filter media and improved seating design bags, or equivalent or superior design if approved by the TCEQ, and secondary HEPA filtration. All HEPA filters must be rated by the manufacturer to achieve a minimum of 99.97% capture efficiency for particles 0.3 micrometre or larger.
- Exide will designate that wheeled and powered plant equipment, such as forklifts, used inside a fully enclosed area will not be used outside of such an area without cleaning inside a permanent total enclosure. Cleaning must include washing of tires, undercarriage, and exterior surface of the vehicle followed by vehicle inspection.
- Exide will conduct remediation activities associated with plant closure in accordance with a TCEQ-approved dust suppression plan. This contingency measure will only be triggered should Exide shut down the plant as an alternative to installing and operating the control measures identified in the Agreed Order.

4.5 MONITORING NETWORK

States are required by 40 CFR, Part 58, Subpart B, to submit an annual network review (ANR) to the EPA by July 1 of each year. This review of the TCEQ's air monitoring networks is required in order to provide the framework for establishment and maintenance of an air quality surveillance system. The ANR must be made available for public inspection and comment for at least 30 days prior to submission to the EPA. The review and any comments received during the 30-day inspection period are then forwarded to the EPA for final review and approval. The TCEQ posted the 2010 plan for public comment from June 1, 2010, through June 30, 2010. The TCEQ then submitted the plan to the EPA on July 1, 2010, for review and approval. The ANR document presented the current Texas network of ambient air quality monitors in Texas for which the TCEQ uploads data to the EPA's Air Quality System (AQS), a national database of air quality data. The 2011 plan will follow the same schedule.

4.5.1 Lead Monitoring Sites in Frisco

From 1981 until mid-1999, the TCEQ monitored lead levels at a residential location on Hickory Street in Collin County, Texas (EPA AQS site identification number 480850001), approximately one-half mile northeast of the Exide plant. The Ash Street monitoring site (AQS 480850007) located at 6931 Ash Street, replaced the Hickory Street site in mid-1999. Another site (Eubanks, AQS 480850009) was located on Exide property inside Exide's security fence near the northern property line, and a third site (Parkwood, AQS 480850003) was located on Exide property outside Exide's security fence west of 5th Street. In July 2010, after meeting with the EPA to determine a location that EPA-Region 6 found acceptable for the maximum-concentration, source-oriented monitor required by the rule establishing the 2008 lead NAAQS, the Eubanks monitor was moved off Exide property and outside the company's security fence so that it could be used to monitor ambient air. As defined in 40 CFR Part 50.1, ambient air means that portion of the atmosphere, external to buildings, to which the general public has access. To meet EPA criteria for regulatory ambient air monitoring data, the following EPA criteria must be met:

- use federal reference method, federal equivalent method, or approved regional methods (40 CFR Part 58, Appendix C);
- meet siting criteria (40 CFR Part 58, Appendix E);

- meet quality assurance requirements (40 CFR Part 58, Appendix A); and
- meet data certification criteria (40 CFR Part 58, Subpart B).

4.5.2 Current Ambient Air Monitoring

The Ash Street monitor is a population-oriented site located in a neighborhood north of the Exide property. The Eubanks monitor is currently located approximately 15 feet north of its previous location on the exterior side of the Exide property fence line. This monitor is a maximum concentration source-oriented site. In August 2010, the Parkwood monitor was moved to the east side of 5th Street in Frisco and is now located outside the Frisco Recycling Center's fence line on an area of the property that is subject to an easement to the City of Frisco.

The EPA currently requires one primary and one co-located lead monitor for Collin County. The TCEQ has voluntarily operated up to three monitors near Exide and has recently installed a fourth lead monitor (Stonebrook, AQS 480850029) located south of the Exide plant at the Frisco Police Station on Stonebrook Parkway. This monitor commenced operations in January 2011. The TCEQ has also recently added an additional co-located lead monitor to its network.

Figure 4-1: *Collin County Lead (Pb) Nonattainment Area* shows ambient lead monitoring locations in the Collin County lead nonattainment area, Frisco, Texas.

Figure 4-1: Collin County Lead (Pb) Nonattainment Area

4.6 CONTINGENCY PLAN

SIP revisions for nonattainment areas are required by §172(c)(9) of the FCAA to provide for specific measures to be implemented should a nonattainment area fail to meet reasonable further progress (RFP) requirements or attain the NAAQS by the attainment date set by the EPA. The contingency plan must be enforceable and should identify measures to be adopted, a schedule and procedure for adoption and implementation, and a specific time constraint on action to be taken by the state. Additionally, the plan should identify specific indicators or triggers that will be used to determine when the contingency measures are to be implemented. The intent of the indicators and triggers is to allow the state and Exide to take early action to remedy an actual or potential violation of the 2008 lead NAAQS prior to the attainment date.

The contingency measures are made enforceable in Agreed Order 2011-0521-MIS.

4.6.1 Contingency Measures

4.6.1.1 Contingency Measure Requirements

- Exide will fully enclose the lead oxide operational area and install negative pressure ventilation, a new point source, and filtration media (either a baghouse or cartridge filter) (FIN 46). This will include the full enclosure of the lead oxide operational area, the installation of negative pressure ventilation sufficient to ensure that lead oxide operational area fugitives are routed to the new baghouse, the installation of a new point source, installation of a new baghouse with PTFE filter media and improved seating design bags, or equivalent or superior design if approved by the TCEQ, and secondary HEPA filtration. All HEPA filters must be rated by the manufacturer to achieve a minimum of 99.97% capture efficiency for particles 0.3 micrometre or larger. The enclosure performance must be consistent with the requirements of 40 CFR §63.544(c) and §63.548(k), as promulgated on January 5, 2012.
- Exide will install and operate according to good engineering practices vacuum hooding over lead oxide loading operations (EPNs 27 and 28). The exhaust air from the vacuum hooding must be routed to an existing or new baghouse with PTFE filter media and improved seating design bags, or equivalent or superior design if approved by the TCEQ, and secondary HEPA filtration. All HEPA filters must be rated by the manufacturer to achieve a minimum of 99.97% capture efficiency for particles 0.3 micrometre or larger.
- Exide will designate that wheeled and powered plant equipment, such as forklifts, used inside a fully enclosed area will not be used outside of such an area without cleaning inside a permanent total enclosure. Cleaning must include washing of tires, undercarriage, and exterior surface of the vehicle followed by vehicle inspection.
- Exide will conduct remediation activities associated with plant closure in accordance with a TCEQ-approved dust suppression plan. This contingency measure will only be triggered should Exide shut down the plant as an alternative to installing and operating the control measures identified in the Agreed Order.

4.6.1.2 Contingency Trigger Levels

A contingency measure would be triggered upon failure to meet RFP requirements or failure to attain the 2008 lead NAAQS. Details regarding the implementation of contingency measures can be found in the Agreed Order (see Appendix A: *Agreed Order 2011-0521-MIS,* Paragraph 38).

CHAPTER 5: REASONABLE FURTHER PROGRESS

5.1 GENERAL

Section 172(c)(2) the Federal Clean Air Act (FCAA) requires areas that have been designated nonattainment for criteria pollutants to include a demonstration of reasonable further progress (RFP) in attainment demonstrations. RFP is defined in FCAA, §172(c)(2) as such annual incremental reductions in emissions of the relevant air pollution as are required by part D or may reasonably be required by the United States Environmental Protection Agency for the purpose of ensuring attainment of the applicable National Ambient Air Quality Standard (NAAQS) by the applicable attainment date.

The Collin County Attainment Demonstration State Implementation Plan (SIP) Revision for the 2008 Lead NAAQS fulfills RFP for the Collin County lead nonattainment area through a compliance schedule that yields consistent and periodic significant emission reductions. This demonstration includes a detailed schedule for compliance of reasonably available control measure (RACM) including reasonably available control technologies (RACT) in the nonattainment area.

5.2 RFP DEMONSTRATION

As stated in the final lead rule (73 FR 67039), RFP is satisfied by the adherence to a compliance schedule that is expected to periodically yield significant emission reductions. Air dispersion modeling conducted for this SIP revision demonstrates that with the controls in Agreed Order 2011-0521-MIS, the ambient lead concentration in the Collin County lead nonattainment area will be below the 2008 lead NAAQS by the December 31, 2015, attainment date. The Agreed Order requires these control measures and resulting emissions reductions to be achieved as expeditiously as possible but no later than January 6, 2014. As pointed out in Section 4.4 *New Control Measures*, several control measures have already been implemented as part of Agreed Order 2011-0521-MIS.

5.3 RACM AND RACT

The Texas Commission on Environmental Quality has developed a detailed implementation schedule of the RACM (including RACT) required in Agreed Order 2011-0521-MIS. This schedule involves the expeditious implementation of all control measures to assure attainment of the 2008 lead NAAQS by the December 31, 2015, attainment date.

RESPONSE TO COMMENTS RECEIVED CONCERNING THE COLLIN COUNTY ATTAINMENT DEMONSTRATION STATE IMPLEMENTATION PLAN (SIP) FOR THE 2008 LEAD NATIONAL AMBIENT AIR QUALITY STANDARD (NAAQS) AND AGREED ORDER BETWEEN THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) AND EXIDE TECHNOLOGIES (EXIDE)

PROPOSED JUNE 22, 2011
ADOPTED AUGUST 8, 2012

The TCEQ conducted a public hearing for the proposed Collin County Lead Attainment Demonstration SIP revision and the Agreed Order between the TCEQ and Exide in Frisco, Texas, on July 28, 2011, at 6:00 p.m. During the comment period, which closed on August 8, 2011, the commission received comments from Downwinders at Risk, the United States Environmental Protection Agency (EPA), Exide, Texas Campaign for the Environment, and 23 individuals.

Comments related to the proposed Collin County Lead Attainment Demonstration SIP revision (Project No. 2011-001-SIP-NR) and the Agreed Order between the TCEQ and Exide (Project No. 2011-0240-MIS-NR) are incorporated in the following Response to Comments.

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GENERAL COMMENTS

An individual commented that the proposal submitted by Get the Lead Out be considered and that the TCEQ should follow its own standard practices and procedures in designing a solution to this serious public health problem.

The commission did not receive comments on the proposed SIP and Agreed Order from Get the Lead Out. The commission follows practices and procedures in

accordance with the EPA's guidance and Federal Clean Air Act (FCAA) requirements to develop plans to demonstrate attainment of the NAAQS. The FCAA requires the EPA to set NAAQS for pollutants from sources considered harmful to public health and the environment. The FCAA establishes the primary NAAQS to set limits to protect public health with an adequate margin of safety including the most sensitive part of the population. The purpose of this SIP revision and Agreed Order is to attain the 2008 lead NAAQS as expeditiously as possible.

An individual pointed out the protections that were lost when Senator Shapiro decided to vacate her bill during the legislative session.

This comment is outside the scope of this analysis. The commission points out that while there were some requirements in Senator Shapiro's bill (Senate Bill 1475, 82nd Texas Legislature) that were more stringent than the proposed Agreed Order, modeling of the controls in the SIP and Agreed Order demonstrates compliance and attainment of the 2008 lead NAAQS.

An individual questioned what has already been done and what actions are being taken by the TCEQ, Exide, and the government. The individual questioned what precautions regarding the transporting of chemicals are being taken to avoid a chemical spill.

The FCAA requires states to develop a targeted place to reduce air pollution in order to meet the health-based lead standard. When the EPA reduced the lead standard or NAAQS in 2008 to 0.15 micrograms per cubic meter (µg/m^3) and a portion of Collin County was designated as nonattainment for the new 2008 standard, the TCEQ began the process of developing the state's plan. During this process, the TCEQ and Exide developed control strategies to reduce lead emissions. The development of the SIP is described in the SIP "narrative," which elaborates on how this plan meets the FCAA requirements. Throughout this process, the TCEQ has been involved in monitoring air quality and SIP compliance in Collin County.

The new control measures needed to demonstrate attainment for the 2008 lead NAAQS in the Collin County nonattainment area are made enforceable by Agreed Order 2011-0521-MIS. For a complete list of control strategies already implemented by Exide as well as those measures that will be implemented by January 2014, please see Section 4.4: *New Control Measures* of the SIP revision.

Precautions involving chemical spills during transport beyond the plant boundaries fall outside the scope of this SIP revision and Agreed Order. The TCEQ's Office of Compliance and Enforcement is involved with coordinating responses to reported chemical spills.

Downwinders at Risk commented that the cement kilns in Midlothian still don't have state-of-the-art controls that are being used in Europe even though its organization has been pushing for these types of controls for years.

Comments regarding controls for cement kilns are beyond the scope of this SIP revision and Agreed Order.

Downwinders at Risk commented that the TCEQ has never written a successful SIP with regard to air quality.

The commission does not agree with this comment. With regard to lead, the EPA designated a portion of Collin County as a lead nonattainment area for the 1978 Lead NAAQS on November 6, 1991. The EPA approved the commission's Collin County lead attainment demonstration SIP revision for the 1978 NAAQS on November 29, 1994. Because of the successful control strategies implemented through the attainment demonstration SIP, the area attained the 1978 lead NAAQS and was redesignated by the EPA to attainment on October 15, 1999. The area remained in attainment of the lead NAAQS until the EPA lowered the standard in 2008. Many other SIPs have also resulted in the lowering of air pollutants and thus improved air quality in Texas.

Downwinders at Risk suggested that individuals who lived in Frisco should become involved with an environmental organization in order to help do more for the community.

The commission encourages public participation and is committed to working with local entities and all interested parties regarding each aspect of the SIP revision process.

An individual commented that the lead NAAQS was up for periodic review and that the EPA would probably lower the standard in the next three years.

The commission is committed to attaining the 2008 lead NAAQS as expeditiously as possible in accordance with the EPA's guidance and FCAA requirements. The commission is not in a position to comment on potential future EPA actions.

The EPA commented that access to Exide's property was not properly secured such that public exposure was limited, so that all of Exide's property can be treated as non-ambient air.

Exide has agreed to additional fencing and surveillance monitoring to limit public access to its property if the plant continues manufacturing operations. This commitment is included in Exide's Agreed Order with the commission.

AIR QUALITY CONCERNS

Five individuals commented that they are in favor of Exide's relocation. One noted that their quality of life had diminished tremendously since Exide has been in the news and that no amount of mediation would lay their concerns to rest except for the relocation of the plant. One commented that Exide should be shut down until the company has agreed to install pollution controls comparable to those of its facility in California. Another commented that if people and houses could be moved to build a new football stadium, then it was time to move the Exide plant away from Frisco.

An individual commented that they are not happy that the plant has been allowed to operate while its emissions are over the standard and that it has taken too long to comply. An individual

commented that Exide has polluted their air, soil, and water with some of the highest lead emissions in the country, and they are distressed that the proposed plan allows Exide to continue to operate. An individual questioned why Exide was given until November 2012 to bring these things under control. An individual commented that allowing Exide to operate as usual until November 2012 is not acceptable.

The commission follows procedures in accordance with FCAA requirements for areas that do not meet the NAAQS. The EPA has determined that areas not meeting the 2008 lead NAAQS should attain the NAAQS as expeditiously as possible but no later than December 31, 2015. This SIP revision and Agreed Order require the implementation of controls to ensure that the appropriate reductions are made so that the area attains the NAAQS as expeditiously as possible. As discussed in Chapter 4: *Control Strategy and Required Elements* of the SIP, some of these controls are already installed and operating. During the RACT and RACM analysis, the TCEQ evaluated the control measures implemented at Exide's California site. As part of Agreed Order 2011-0521-MIS, PTFE membrane filter media has already been installed on the baghouses at the Exide site in Frisco. The Agreed Order also requires the installation of HEPA filters as secondary control devices for all process emission sources, which will make the process emission control configuration identical to that used at Exide's California facility. Additional controls, including WESP, are not necessary at the Frisco plant because the area is expected to reach attainment of the NAAQS with controls that will be installed because of the Agreed Order. The commission does not have the authority to require any facility to shut down without due process, which would include a demonstration that the facility posed an imminent threat to human health. Exide has agreed to install controls that will enable the area to reach attainment of the 2008 lead NAAQS as expeditiously as possible. As discussed elsewhere, the NAAQS are health-based standards designed to protect public health including sensitive populations.

As part of the agreement between the City of Frisco and Exide, Exide has agreed to close the plant, cease all manufacturing operations, and remediate the property. The TCEQ is not a part of the agreement between the City of Frisco and Exide. However, as part of its Agreed Order with the TCEQ, Exide has agreed to notify the TCEQ by November 1, 2012, if it plans to close the plant. Should Exide choose this alternative, Exide will close the plant no later than January 6, 2014, and void its air quality permits for the plant no later than December 31, 2015, other than any authorizations required for operation of the wastewater treatment plant, instead of installing and operating the other control measures identified in the Agreed Order and the SIP.

An individual stated that the proposal deviated from TCEQ standard practices and that business has been favored at the cost of the health of local citizens. An individual commented that the proposal will not provide safety for the citizens and that regulators have chosen to place business interests above the environment.

The commission disagrees with these comments. The lead emissions from Exide have not increased. In 2008, the EPA lowered the NAAQS for lead from 1.5 µg/m3 to 0.15 µg/m^3. Because of this ten-fold reduction in the standard, the then-current

lead emissions from Exide, the primary lead source in the area, resulted in an area of Collin County in Frisco being designated as nonattainment for the 2008 lead NAAQS. The commission then began the process of developing a SIP revision to ensure that the area would attain the 2008 lead NAAQS as expeditiously as possible. As part of this process, the commission has worked with Exide to develop control strategies to reduce Exide's lead emissions to a level that will allow the area to reach attainment of the 2008 lead NAAQS. In 2010, the commission proposed a SIP revision and an Agreed Order containing the proposed control measures to lower Exide's lead emissions. The proposed SIP and Agreed Order were based on the best data that the commission possessed at the time and included proposed measures that would require Exide to reduce lead emissions to levels that would allow the area to reach attainment of the 2008 lead NAAQS. The commission has re-examined the available information and considered all the comments that were submitted on the proposed SIP revision and Agreed Order. Necessary changes have been made to ensure that Collin County will attain the 2008 lead NAAQS as expeditiously as possible. The NAAQS are health-based standards that are designed to protect sensitive populations including children and elderly. The modeling conducted for this SIP revision demonstrates that with the controls that are required by the Agreed Order the lead emissions from Exide will be low enough to allow the area to demonstrate attainment of the NAAQS.

Two individuals commented that they analyzed the impact of particulate matter and Sulfur Dioxide (SO_2) currently authorized in Exide's permits by modeling the permit allowable emission rates and concluded that the area around the Exide facility was nonattainment for particles with an aerodynamic diameter less than or equal to a nomimal 2.5 micrometers ($PM_{2.5}$) and SO_2. Downwinders at Risk commented that according to these individuals' comments, Exide's emissions are causing violations of the FCAA for $PM_{2.5}$ and SO_2 and that the TCEQ should thoroughly investigate.

The purpose of this SIP is to address attainment of the 2008 lead NAAQS, and therefore, comments regarding other pollutants are beyond the scope of this analysis. However, the types of controls that will be implemented as a result of the SIP revision and Agreed Order will reduce particulate emissions as a means to reduce lead emissions.

An individual commented that the preliminary lead nonattainment boundary was later revised and was reduced in size and that lead was a problem no matter what the size of the boundary area. Downwinders at Risk commented that the current boundary of the Frisco nonattainment area has not been proven to be protective of public health.

The initial boundary recommendation, based on existing monitoring and dispersion modeling information, was submitted to the EPA on October 14, 2009. Exide submitted new information to the TCEQ on October 5, 2010, documenting a reduction in permitted allowable emission rates through a permit alteration. The revised recommendation used the same methodology as the original recommendation but incorporated reduced permit limits in the dispersion modeling thereby reducing the size of the nonattainment area. The boundary of the nonattainment area was determined in accordance with EPA guidance, and the

EPA officially approved this recommendation in the Air Quality Designations for the 2008 lead NAAQS final rule (EPA-HQ-2009-0443) on November 22, 2010.

HEALTH EFFECTS

Three individuals that have young children commented that they were concerned about the health effects of lead exposure especially the health effects to their young children.

The commission appreciates the individuals' concerns about health effects from lead exposure. The FCAA requires the EPA to set NAAQS to protect public health with an adequate margin of safety including the most sensitive part of the population, and the modeling demonstration that this SIP revision is based on will result in the area coming into attainment of the NAAQS. Therefore, implementation of this SIP revision is expected to result in no adverse health effects. In addition, the slight exceedance of the lead NAAQS observed in Frisco does not necessarily mean that adverse health effects will occur. In fact, a blood lead exposure investigation conducted in Frisco during March 2011 by the Texas Department of State Health Services (TDSHS) did not indicate blood lead levels of concern. A person's blood lead level is the best indicator of lead exposure from all sources (e.g., soil, food, toys, lead-based paint, drinking water, and ambient air).

The TCEQ's health effects evaluation of airborne lead exposure around Exide is available at http://www.tceq.texas.gov/assets/public/implementation/tox/monitoring/evaluation/2010/reg_4_dallas.pdf. Using an EPA-approved model and concentrations of lead at a Frisco monitor that are representative of community exposure, predicted results do not indicate blood lead levels of concern. In fact, the predicted blood lead levels due to lead in the air are below the analytical detection limit of blood lead levels.

With lead emission reductions required by the SIP and Agreed Order, the ambient air lead concentrations around Exide are expected to be lower than the levels used in this health effects evaluation. In addition, air monitor locations are carefully selected to represent the highest potential ambient lead concentrations as logistically feasible. Thus, the concentration a person is exposed to would likely be much lower than those concentrations reported from monitors. It is not expected that the amount of lead emissions specified by the SIP revision or the currently monitored lead level will produce adverse health effects to the residents of Frisco including children, which is the most sensitive portion of the general population.

Downwinders at Risk and two individuals commented that there was no safe level of lead, so the amount of lead emissions specified in the SIP revision was capable of doing harm to the residents of Frisco, especially children.

The FCAA requires the EPA to set NAAQS for pollutants from sources considered harmful to public health and the environment. The FCAA established primary standards to set limits to protect public health including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards are set to protect public welfare. The FCAA requires periodic review of the science upon which the standards are based and the standards themselves.

In 2008, the levels of the primary and secondary NAAQS for lead were lowered ten-fold from the 1978 level of 1.5 µg/m³ to a level of 0.15 µg/m³. The EPA's decision on the level for the primary standard was based on the expanded health effects evidence on neurocognitive effects of lead in children.

According to the literature, the increase of lead levels in the blood of children and adults is less likely to occur from breathing low concentrations of lead in the air compared to the contact with lead from other sources such as ingestion of lead-based paint chips, soil contaminated with lead-based paint chips, food, drinking water, and even toys painted with lead-based paint. Although lead is a toxic metal, it occurs naturally in the environment and can be found at low concentrations in the soil, water, food, air, etc. Lead exposure from lead-based paint and soil contaminated with lead-based paint are the major contributors to elevated blood lead levels in children.

The TCEQ investigated the impact of lead in the air on blood lead levels in children using an EPA-approved model. The EPA developed the Integrated Exposure Uptake Biokinetic (IEUBK) model to estimate the blood lead concentrations of children less than seven years old being exposed to lead from multiple sources and through various pathways. Using the average Frisco soil lead concentration of 38.31 milligrams per kilogram determined from EPA soil sampling around Exide in March 2010, the estimated geometric mean blood lead levels for children are similar (between 1.22 and 1.30 micrograms of lead per deciliter of blood (µg/dL)) regardless of whether the NAAQS (0.15 µg/m³), the reported annual average (0.11 µg/m³), or the highest rolling three-month average (0.21 µg/m³) lead concentration from the Frisco 7 community monitor (Ash Street AQS Code#480850007) is used as an input to the IEUBK model. These calculated blood lead levels are less than the detection limit of lead in blood of 2 µg/dL. A detailed discussion of the TCEQ analyses can be found in a memorandum dated August 29, 2011. Pages 9 through 14 of the memorandum include information specific to lead exposure around Exide. The memorandum may be accessed at the following link: http://www.tceq.texas.gov/assets/public/implementation/tox/monitoring/evaluation/2010/reg_4_dallas.pdf.

Although reported ambient air lead concentrations from monitors around Exide have exceeded the 2008 NAAQS for lead, blood lead levels of Frisco residents do not indicate levels of health concern (i.e., the United States Centers for Disease Control and Prevention (CDC) guideline level of 10 µg/dL).

The TDSHS conducted a blood lead exposure investigation in Frisco during March 2011. Of the 608 blood samples tested by the TDSHS laboratory, 575 (95%) did not contain detectable levels of lead (detection limit of 2 µg/dL). Only two samples, both from adults who were potentially exposed to lead at work, were found to have blood lead levels above 10 µg/dL. Although above the threshold set for children, these two adult blood samples were below the 25 µg/dL level of concern for adults set by the CDC. Detailed information is available in the fact sheet or the final report for the investigation. The fact sheet is available at: http://www.dshs.state.tx.us/epitox/education.shtm, and the final report is available at: http://www.dshs.state.tx.us/epitox/assess.shtm. The results of the

blood-lead study of citizens in Frisco and the modeled results from the EPA's IEUBK model corroborate the Toxicology Division's understanding that ambient air lead concentrations are not causing an unsafe exposure to lead from lead air emissions.

An individual commented that the 10 µg/dL guideline for blood lead level of concern from the CDC was outdated. The individual also commented that studies indicated learning and intelligence quotient (IQ) deficits occurred at blood lead levels of 2 µg/dL.

The purpose of the SIP and Agreed Order is to lower lead concentrations in air around Exide so that the area comes into compliance with the 2008 lead NAAQS as expeditiously as possible. While the TCEQ is familiar with the latest scientific information on blood lead levels, the obligation to reduce ambient lead concentrations is unaffected by the CDC's guideline level, since the EPA has established the air quality standard that is protective of public health.

The commission is aware of research indicating that subtle health effects may occur below the CDC guideline level of 10 µg/dL. However, there are uncertainties about these studies (see discussion below). According to the literature and the TCEQ's analysis using an EPA-approved model, breathing low concentrations of lead in the air, such as those measured in Frisco, is a minor pathway to the general public and results in children's blood lead levels below 2 µg/dL.

It is known that exposure to high levels of lead can cause a variety of health effects including effects on the central nervous system, cardiovascular system, kidney function, red blood cell formation, and reproductive and developmental effects. However, at low levels of environmental lead exposure, health effects are subtle. Specifically, the effects of low exposures (low blood lead concentrations) are estimated and not observed and are, therefore, inconclusive. Recent reports indicate that subtle health effects may occur at very low blood lead levels (ranging from 2 to 7 µg/dL). However, many of the reported health outcomes (e.g., IQ or academic performance) have complex etiologies, are difficult to accurately assess, and are based on observational epidemiology studies. If important confounders in epidemiology studies were not considered in the study design or could not be adjusted for, the reported subtle health effects of exposure to low levels of lead are unlikely to be accurate.

A specific example regarding an inconclusive association between blood lead at 2 µg/dL and attention deficit hyperactivity disorder (ADHD) using the National Health and Nutrition Examination Survey (NHANES) data is presented. NHANES is a program of studies designed to assess the health and nutritional status of adults and children in the United States. Braun et al. (2006) found a positive relationship between blood lead level and ADHD (parent-report of a diagnosis of ADHD or use of stimulant medication) in a recent analysis of NHANES 1999 through 2002 data.[1] However, the associations were not statistically significant, meaning the relationship was likely due to chance and is therefore not

[1] Braun, J. M., R. S. Kahn, T. Froehlich, P. Auinger, and B. P. Lanphear. 2006. Exposures to environmental toxicants and attention deficit hyperactivity disorder in U.S. children. Environ Health Perspect 114 (12):1904-9.

scientifically established. Using the same NHANES dataset, restricting children ages to 8-15 years, Froehlich et al. (2009) found that prenatal tobacco smoke (maternal report) exposure and blood lead levels are associated with ADHD, although prenatal tobacco smoke exposure was the greater risk factor.[2] However, both studies have important limitations because of their inability to adjust for parental psychopathology - one of the most important confounders when studying the associations of ADHD and environmental risk factors since ADHD heritability has been estimated to be about 75% (Biederman and Faraone 2005).[3] Therefore, for diseases or health effects with a complex etiology such as ADHD or learning and IQ deficits, many confounders (currently both known and unknown) have to be considered and carefully adjusted for when attempting to elucidate any association, statistical or causal, between blood lead level and diseases or health effects.

An individual commented that lead exposure was from contaminated soil and soil lead standard of 400 parts per million (ppm) was too high and recommended a soil mapping study around Frisco.

While the commission appreciates the individual's concern about soil lead contamination and the soil standard, it is beyond the scope of this SIP revision to conduct comprehensive analysis of soil near Exide. Furthermore, the EPA conducted a Neighborhood Soil Survey around Exide in March 2010 and concluded that concentrations are below regulatory levels of concern, and no further testing or remedial action is needed for those areas that were sampled. Detailed information regarding the EPA Neighborhood Soil Survey around Exide is available at:
http://www.tceq.texas.gov/airquality/sip/stakeholders/pb_stakeholder.

An individual commented that diseases such as Asperger's, autism, and Down Syndrome were occurring disproportionately around Frisco.

The commission appreciates the individual's concern about the health effects from lead exposure. There are no conclusive associations between lead exposure and diseases such as Asperger's or autism in the scientific literature. Down syndrome is a genetic disease and has not been clearly linked with lead exposure.

IMPACTS ON WATER AND SOIL

An individual cited an inspection of the Exide facility by the EPA in 2009 and stated that they were deeply troubled by potential contamination from lead via groundwater, soil, and stormwater run-off. The individual urged the TCEQ to form a multi-discipline team to address all lead air, soil, and water contamination issues associated with the Exide facility. An individual referred to findings from an EPA Region 6 Multimedia Inspection Report dated September 13, 2010, that revealed soil and water contamination problems on the Exide property and

[2] Froehlich, T. E., B. P. Lanphear, P. Auinger, R. Hornung, J. N. Epstein, J. Braun, and R. S. Kahn. 2009. Association of tobacco and lead exposures with attention-deficit/hyperactivity disorder. Pediatrics 124 (6):e1054-63.
[3] Biederman, J., and S. V. Faraone. 2005. Attention-deficit hyperactivity disorder. Lancet 366 (9481):237-48.

questioned how these problems identified in the EPA's report were missed or ignored by the TCEQ. The individual strongly urged the TCEQ to take immediate enforcement action against the known soil, surface water, and groundwater contamination on the Exide property and commented that it would be unconscionable for the TCEQ to only address the air noncompliance and stop there. An individual voiced concern over potential water contamination.

While issues involving soil and water quality are beyond the scope of this SIP revision and Agreed Order, the commission reviews the impact to soil and water quality through other programs. On September 12, 2011, the TCEQ initiated formal enforcement action against Exide for alleged violations of industrial and hazardous waste requirements. Exide is being required through the enforcement process to evaluate the impact to soil and water and to remediate any identified contamination pursuant to the Texas Risk Reduction Program.

EVALUATION OF THE SIP REVISION AND AGREED ORDER

Exide commented that it has developed improvements to the traffic plan for truck traffic within the facility. Exide has provided a new traffic flow diagram to reflect those improvements and recommended that the new diagram replace the existing traffic flow diagram in Attachment C of the proposed Agreed Order.

The new traffic flow diagram has been replaced in Appendix C of the Agreed Order.

Exide commented that it supports the proposed SIP revision and Agreed Order and believes that the control measures go beyond what is needed to meet the 2008 lead NAAQS.

An individual commented that the SIP revision and Agreed Order anticipated that the area will attain the 2008 lead NAAQS by a small number – just below the standard, but that this number is not realistic. Texas Campaign for the Environment commented that the proposal was a good first start but it didn't go far enough to address the health issues and concerns of the people who live there. An individual commented that the plan will not improve the lead toxicity problem in Frisco. An individual commented that data in the SIP proposal did not add up. An individual commented that the proposal was flawed.

An individual commented that the proposed SIP revision should be withdrawn, corrected, and re-proposed. An individual commented that the proposed SIP revision and Agreed Order will fall short of actual compliance and requested that the proposal be amended to take into account the calculations and factors addressed in the report submitted by Spirit Environmental in order to ensure compliance with the lead NAAQS.

Downwinders at Risk commented that even though the TCEQ is holding a public hearing and is taking comments on the proposed SIP revision, the TCEQ is not going to accept any comments and will not change the SIP document.

Due to substantial comment from the public and the EPA, the SIP revision and Agreed Order have been revised. Based on the specific comments received, the TCEQ requested and received detailed information from Exide, which resulted in a more robust demonstration of attainment. Specific details regarding the improvements can be found in the Air Dispersion Modeling section of this Response to Comments document.

PUBLIC PARTICIPATION IN SIP DEVELOPMENT

An individual commented that they appreciated the TCEQ's outreach to the public including access to documents through the Web site and the two public meetings held in Frisco.

The commission appreciates the support and will continue to encourage public participation in the SIP development process.

An individual commented that the numbers in some of the backup documents for a study didn't add up, that the numbers were not based on the permitted emissions, and that the TCEQ put false information on its Web site. The individual commented that people were getting mixed up because they didn't understand the technical details of the proposal and that the TCEQ needed to do a better job of communicating to the public.

The commission did not knowingly put false information on the Web site. The commission contracted with Eastern Research Group Inc. (ERG) to conduct a comprehensive evaluation of air quality control techniques used for lead-acid battery recycling that could potentially be used to reduce lead emissions from the Exide facility. The objective of the study was to produce a menu of potential control technologies and industry best management practices available to reduce lead emissions and estimate associated costs, time to implement, and expected reductions in lead emissions. After the report was finalized, it was pointed out that the total potential reduction of fugitive emissions from Exide as stated in the report were higher than the actual stated fugitive emissions. The contractor was alerted to this, and an error was discovered in the calculation process. ERG revised the report and apologized for the error. Two numbers in Table 1 of the report were changed, but the overall conclusions of the report were not affected by the revision. The revised report was immediately posted to the State Implementation Plan for Lead Stakeholder Group Web page.

The TCEQ established a lead stakeholder group and a dedicated Web page as an effort to provide a mechanism for communicating with the public regarding the technical information associated with implementation of the lead SIP. The TCEQ held a public meeting in Frisco on January 19, 2011, to get input from local stakeholders. A public hearing regarding the proposed lead SIP and Agreed Order was held in Frisco on July 28, 2011. The TCEQ has also participated in numerous meetings and has answered many questions from stakeholders since the revision of the lead NAAQS. The TCEQ welcomes any specific suggestions on techniques for improving communications with the public on this matter.

EMISSIONS INVENTORY

An individual commented that Exide's reported 2010 emissions inventory lead emissions total of 1.09 tons per year (tpy) from Chapter 2.2: *Point Sources* of the SIP narrative was inaccurate because it did not include emissions from other sources at Exide. An individual commented that all sources of lead emissions may not be reported in the annual point source emissions inventory.

Exide is a major stationary source of air pollution per 30 Texas Administrative Code (TAC) §116.12 and is required to submit an annual emissions inventory update per 30 TAC §101.10(a)(1). Per the §101.10 reporting requirements, Exide is

required to report actual emissions of all criteria pollutants, including lead, in its annual emissions inventory. On March 23, 2011, the TCEQ requested that Exide update its 2010 emissions inventory to provide emissions from all sources that emit more than two pounds of lead per year including those not currently represented in the 2010 emissions inventory. On February 24, 2011, Exide responded that all lead emissions sources that could be quantified are represented in the 2010 emissions inventory. On April 1, 2011, Exide acknowledged that representative test data and/or emissions factors are not available to quantify battery breaker emissions. However, this source was evaluated and emission estimates were included in the TCEQ modeling conducted for this SIP revision. Emissions from the battery breaker will be controlled with an enclosure and negative pressure ventilation sufficient to ensure that fugitive emissions are routed to a new baghouse per the Agreed Order with the TCEQ.

An individual commented that historic emissions inventory data did not appear to trend consistently with ambient air lead concentrations. The individual commented that there was not good correlation between the reported lead emissions in the Toxics Release Inventory (TRI) and monitored concentrations.

It is not unusual to have a poor correlation between reported annual emissions and ambient air monitoring samples taken on a non-continuous basis. For an emission source to affect a monitor, winds have to blow from the source towards the monitor, which is not always the case. An emissions inventory (EI) will include estimates of emissions from all known stack and fugitive sources for operation throughout the entire year. The TRI is a self-reporting inventory administered by the EPA. The EPA issues TRI reporting guidance regarding air emissions reporting and is responsible for the quality assurance of the reported data. While these EI and TRI data do provide a measure of the level of activity at the Exide facility, SIP designation and attainment decisions are not based on EI or TRI data. The FCAA and EPA rules require that SIP designations and attainment decisions for lead be based on monitoring results.

MONITORING

Exide commented that, in general, it agreed with the description in Section 4.5.1: *Lead Monitoring Sites in Frisco* of past and current monitoring sites, although it suggested that discussion of current monitoring requirements and sites be more clearly separated in Section 4.5.1 from discussion of the past history of monitoring sites in the area. Exide offered a correction to the description of the area's current monitoring for site 480850003.

In order to provide a distinction between historical and current monitors, the proposed SIP revision has been modified by adding Section 4.5.2: *Current Ambient Monitoring*, to discuss current monitoring sites. The revision also corrects the description of monitoring site 480850003.

An individual commented that some of the lead monitors should be relocated and set to an off-day cycle to better capture the true picture of lead exposure to the area and prevent gaming the testing system. The individual also commented that the lead NAAQS did not factor the impact to the general population surrounding the plant and that monitoring and enforcement needed to be elevated.

The comment regarding changing the monitoring schedule is beyond the TCEQ's jurisdiction. The EPA requires states to sample on a prescribed sampling schedule, and the data collected according to this schedule is the factor used to determine whether air quality meets the lead NAAQS. As discussed elsewhere in this Response to Comments document, the FCAA requires the EPA to set NAAQS for pollutants from sources considered harmful to public health and the environment. The FCAA establishes primary standards to set limits to protect public health with an adequate margin of safety including the most sensitive part of the population.

The EPA lead monitoring regulation (Docket No. EPA-HQ-OAR-2006-0735) published on December 27, 2010, requires one monitor to be located near lead sources that emit 0.5 tpy or more. The TCEQ goes beyond what is federally required and operates four primary and two co-located monitors located east, north, north-northwest, and south of the Exide facility. The monitor north-northwest of the facility is located in the area that was determined to have the highest concentration of lead in ambient air in Collin County. This monitor is located to provide information on the highest ambient air impact of the Exide facility based on modeling and historical monitoring. The other three primary monitors provide additional data reflecting non-dominant wind patterns.

CONTROL STRATEGIES

Eight individuals commented that Exide's lead emissions should be reduced to the maximum level achievable. An individual requested the TCEQ require Exide to use the best available technology and cut emissions to less than 20 pounds of lead per year.

The TCEQ's jurisdiction is established by the Texas Legislature and is limited to the issues set forth in statute. The purpose of this SIP revision and Agreed Order is to require controls that allow Collin County to come into attainment with the 2008 lead NAAQS as expeditiously as possible. Accordingly, the TCEQ does not have jurisdiction to consider control measures that go beyond what is necessary to meet FCAA requirements. FCAA, §172(c)(1) requires that the SIP incorporate all RACM, including RACT, for sources of relevant pollutants. States containing areas designated as nonattainment are required to submit a SIP revision demonstrating that the associated enforceable control measures fulfill the RACT and RACM requirements for sources of ambient lead concentrations (73 FR 67035, November 12, 2008). The EPA defines RACT as the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility (44 FR 53761, September 17, 1979). RACT requirements are included in the FCAA to assure that major sources of emissions are controlled to a reasonable extent, but not necessarily to best available control technology levels expected of new sources or to maximum achievable control technology (MACT) levels required for major sources of hazardous air pollutants. Agreed Order 2011-0521-MIS includes the control measures that the TCEQ determined to meet RACT and RACM criteria. Air dispersion modeling conducted for this SIP revision demonstrates that with the controls in Agreed Order 2011-0521-MIS, the ambient lead concentration in the Collin County lead nonattainment area will be below the 2008 lead NAAQS by the December 31, 2015, attainment date. Because the lead emissions that will remain after Exide has installed and is operating all the required controls included in the

Agreed Order are sufficient for Collin County to demonstrate attainment of the 2008 lead NAAQS, it is unnecessary to impose an emission limit of less than 20 pounds of lead on Exide.

In addition to complying with the control requirements in Agreed Order 2011-0521-MIS, Exide must comply with the EPA's NESHAP for secondary lead smelters in 40 Code of Federal Regulations (CFR) Part 63, Subpart X. For major sources, these technology-based standards must reflect the maximum degree of emission reductions of hazardous air pollutant achievable after considering cost, energy requirements, and non-air quality health and environmental impacts and are commonly referred to MACT standards. According to FCAA, §112(d)(2)(A) - (E), MACT standards must require the maximum degree of emissions reduction through the application of measures, processes, methods, systems, or techniques including, but not limited to, measures that: reduce the volume of or eliminate pollutants through process changes, substitution of materials or other modifications; enclose systems or processes to eliminate emissions; capture or treat pollutants when released from a process, stack, storage, or fugitive emissions point; are design, equipment, work practice, or operational standards (including requirements for operator training or certification); or are a combination of the above.

Furthermore, Exide operates under New Source Review (NSR) permits as required by both state and federal law. Exide must revise its permits before installing the control equipment required by the Agreed Order. If any change proposed by Exide would make an increase in a pollutant or change the character of emissions, the permit will also require an evaluation of control technology.

As part of the agreement between the City of Frisco and Exide, Exide has agreed to close the plant, cease all manufacturing operations, and remediate the property. The TCEQ is not a part of the agreement between the City of Frisco and Exide. However, as part of its Agreed Order with the TCEQ, Exide has agreed to notify the TCEQ by November 1, 2012, if it plans to close the plant. Should Exide choose this alternative, Exide will close the plant no later than January 6, 2014, and void its air quality permits for the plant no later than December 31, 2015, other than any authorizations required for operation of the wastewater treatment plant, instead of installing and operating the other control measures identified in the Agreed Order and the SIP.

Reasonably Available Control Technology (RACT), Reasonably Available Control Measures (RACM)

An individual commented that the proposed SIP revision and Agreed Order highlighted the impact of fugitive emissions from Exide and indicated that the origin and amount of these fugitive emissions were not well understood. The individual commented that both the ERG report entitled *Comprehensive Evaluation of Air Quality Control Technologies Used for Lead-Acid Battery Recycling* and the EPA's multimedia inspections of the Exide facility in Frisco have documented Exide's inability to control fugitive emissions. The individual commented that a more effective approach for controlling fugitive emissions is required to assure compliance with the NAAQS and meet FCAA RACT and RACM requirements. The individual recommended the commission adopt as RACT and RACM all requirements in California's South Coast Air Quality

Management District (SCAQMD) November 2010 final Rule 1420.1 entitled *Emissions Standard for Large Lead-Acid Battery Recycling Facilities*.

Agreed Order 2011-0521-MIS includes the fugitive emission control measures that the commission determined to meet RACT and RACM criteria. As part of the RACM and RACT analysis, the TCEQ evaluated the control measures contained in SCAQMD Rule 1420.1. Control measures in SCAQMD Rule 1402.1 that were determined to meet RACM and RACT criteria are included in Agreed Order 2011-0521-MIS, and control measures similar to those in SCAQMD Rule 1420.1 are also included in the newly promulgated NESHAP requirements in 40 CFR Part 63, Subpart X. Air dispersion modeling conducted for this SIP revision demonstrates that with the controls in Agreed Order 2011-0521-MIS the ambient lead concentration in the Collin County lead nonattainment area will be below the 2008 lead NAAQS by the December 31, 2015, attainment date. After Exide has installed and is operating all the required controls included in the Agreed Order, lead emissions are sufficiently reduced for Collin County to demonstrate attainment of the 2008 lead NAAQS. It is unnecessary for a lower lead emission limit beyond that required in this plan to be imposed on Exide.

To ensure that area fugitive emissions are routed to a high efficiency control device, Exide will fully enclose and place the secondary lead smelting operations, including battery breaking operations, blast and reverberatory furnaces, refining and casting operations, slag treatment and fixation, and raw materials storage and handling areas under negative pressure ventilation. Pick-up hoods are employed to capture process fugitives from the blast and reverberatory furnaces. These process fugitives are exhausted through control devices. Exide will install high speed roll-up doors, unless there is a truck dock system installed, on the total enclosures to help maintain negative pressure and reduce fugitive emissions. Exide will also install dock seal at each dock to eliminate the release of fugitive dust during loading and unloading.

Exide will also implement the following operational work practices and housekeeping requirements that minimize fugitive lead-dust emissions to the ambient air: traffic plans for materials loading and unloading, traffic plans that avoid areas with the potential to create fugitive lead-dust, inspection and immediate removal of leaking lead-acid batteries upon delivery, and the cleaning of equipment that is contaminated with lead inside of a permanent total enclosure prior to moving such equipment to a maintenance building.

An individual commented that the TCEQ relied significantly on the ERG report entitled *Comprehensive Evaluation of Air Quality Control Technologies Used for Lead-Acid Battery Recycling* to develop the Agreed Order and the RACT and RACM analysis. The commenter also expressed concern that the ERG report did not fulfill its contract scope of work and contained technical deficiencies and noted several shortcomings within the ERG report. The individual commented that the combination of the ERG report understating the fugitive emissions and overstating the ability to control these fugitives provides an inaccurate base for the TCEQ to reach an accurate control technology or control measure strategy. The individual commented that the ERG report also understated the opportunity for stack emission reductions.

The commission disagrees that the information in the ERG report hindered the development of an accurate control strategy. As discussed in Chapter 4: Control Strategy and Required Elements of this SIP revision, the TCEQ used multiple resources to develop the RACM and RACT analysis. The final list of potential control strategy concepts for the RACM and RACT analysis includes the strategies presented to stakeholders and the strategies suggested by stakeholders during the informal stakeholder comment process; control measures proposed or implemented at similar secondary lead smelting facilities in other states; and control technologies and measures recommended in the ERG report entitled *Comprehensive Evaluation of Air Quality Control Technologies used for Lead-Acid Battery Recycling*. The TCEQ also conducted independent research on the control technologies for secondary lead smelting operations including contacting South Coast Air Quality Management District staff to discuss the requirements in Rule 1420.1, Emissions Standard for Lead from Large Lead-Acid Battery Recycling Facilities. Staff also contacted control device manufactures to discuss baghouses and WESP technologies and the estimated time to install these technologies. See Appendix F: *Reasonably Available Control Measure (RACM) and Reasonably Available Control Technology (RACT) Analysis* of this SIP revision for a complete list of control measures and determinations. Agreed Order 2011-0521-MIS includes the control measures that the commission determined to meet RACT and RACM criteria. Air dispersion modeling conducted for this SIP revision demonstrates that with the controls in Agreed Order 2011-0521-MIS the ambient lead concentration in the Collin County lead nonattainment area will be below the 2008 lead NAAQS by the December 31, 2015, attainment date.

One individual commented that the value of 2,786 homes within 3,000 feet from the Exide facility was reduced by an estimated $51 million due to environmental hazards and commented that the home values would be restored if lead emissions were mitigated and prior impacts remediated. The individual requested the TCEQ include the impact of local housing value in the RACT analysis.

In the September 17, 1979, issue of the *Federal Register* (44 FR 53762), RACT is defined as 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. Economic feasibility considers the cost of reducing emissions and the difference between the cost of the emissions reduction approach at the particular source in question and the costs of emissions reduction approaches that have been implemented at other similar sources. The capital costs, annualized costs, and cost-effectiveness of an emissions reduction technology are considered in determining whether a potential control measure is reasonable for an area or state. Local housing value is not part of the RACT analysis criteria.

Wet Electrostatic Precipitator (WESP)

Exide supported the conclusion that the installation of WESP control technology is not RACM or RACT for lead-acid battery operation with secondary lead smelting and lead oxide operations.

The commission appreciates the support. As discussed in Chapter 4: *Control Strategy and Required Elements* of this SIP revision, the TCEQ determined that

the installation of WESP is not RACT or RACM for the Exide facility in Collin County because it is not economically feasible given the estimated emission reductions.

One individual supported the Agreed Order with Exide but requested that WESP technology be included as RACT. One individual requested the WESP and Regenerative Thermal Oxidizer technology be considered RACT especially given the population in the immediate area and the density of children.

Downwinders at Risk and two individuals disagreed with the TCEQ's determination that WESP is not RACT or RACM because of its high cost and requested the TCEQ reconsider that determination. The commenters noted that in the final rule for the 2008 lead NAAQS, the EPA stated that "it is reasonable for similar sources to bear similar costs of emissions reduction. Economic feasibility for RACT purposes is largely determined by evidence that other sources in a particular source category have in fact applied the control technology or process change in question." The commenters added that of the 14 secondary lead smelters in the United States in 2011, one site in California is currently operating a WESP, and two additional sites in Indiana and New York are anticipated to install WESP before 2013.

Two individuals also disagreed with the TCEQ's determination that WESP is not RACT or RACM because of its unproven performance. The commenters also indicated that Envirotech, the manufacturer of the WESP installed at the Quemetco facility in California, stated that WESP technology could be used to control waste gas from blast and reverberatory furnaces. The commenter added that Envirotech stated the waste gas would need to be properly conditioned so that the temperature is less than 200 degrees Farenheit and estimated that a gas conditioning system at Exide would be no more than $100,000 in additional capital cost. The commenters requested the TCEQ require Exide to install a WESP and lower total lead emissions to less than 11.21 pounds per year. The commenters stated that the Quemetco facility with a WESP in City of Industry, California, reported total lead emissions of 11.21 pounds of lead in 2010, which is 97.7% lower than what Exide claims its emissions would be after November 2012. Downwinders at Risk commented that there are no technical feasibility issues associated with the application of WESP.

The TCEQ determined that the installation of WESP control technology is not RACT or RACM for the Exide facility in Collin County because it is not economically feasible given the estimated emission reductions. In the recently promulgated revisions to the NESHAP for Secondary Lead Smelting in 40 CFR Part 63, Subpart X, the EPA stated that adding WESP technology as supplementary control for hazardous air pollutant (HAP) metal is excessively costly and not cost-effective (76 FR 29058). According to the supporting documentation, the cost-effectiveness of installing WESP technology at all secondary lead smelting facilities is an estimated $2.37 million per ton of HAP (Docket No. EPA-HQ-OAR-2011-0344-0155). In comparison, the cost-effectiveness of complying with all of the newly promulgated NESHAP requirements is an estimated $0.33 million per ton of HAP (Docket No. EPA-HQ-OAR-2011-0344-0155). Agreed Order 2011-0521-MIS requires Exide to install HEPA filters as secondary lead control devices. HEPA filters have a minimum 99.97% control efficiency for the removal of particles with a diameter of at least 0.3 micrometre. According to EPA's Air Pollution Control Technology Fact Sheet (EPA-452/F-03-023), the capital cost for a HEPA filter is $6,400 to $8,500

per standard cubic meter per second (scm/sec) or $3.00 to $4.00 per standard cubic feet per minute (scfm). According to EPA's Air Pollution Control Technology Fact Sheets (EPA-452/F-03-030 and EPA-452/F-03-023), the control efficiency of a typical new WESP design is between 99% and 99.9%, and the capital cost is $42,000 to $85,000 per scm/sec or $20 to $40 per scfm, which is roughly 10 times the capital cost of a HEPA filter. The HEPA filter provides equivalent control efficiency at a much lower cost than a WESP.

WESP has been installed at one secondary lead smelting operation in California to comply with the AB2588 Toxics Hot Spots program, a unique regulatory requirement that specifically addresses cancer risk from arsenic and other heavy metal emissions. The facility in California selected WESP technology as a secondary pollution control device installed after the baghouse to further reduce arsenic emissions from the secondary lead smelting operation. In this case, WESP technology may be reasonable for facilities that operate electric arc furnaces (EAF) as part of the secondary lead smelting process. EAFs operate at much higher temperatures (2500 - 3000 degrees Fahrenheit) than the blast furnaces used at the Exide facility in Frisco. This higher heat volatilizes compounds such as arsenic and other heavy metals, which makes the particles more difficult to remove using a dry filtration device, such as a baghouse or secondary HEPA filter. Arsenic and other heavy metals such as lead are not volatilized in secondary lead smelting operations using blast and reverberatory furnaces, such as those used at the Exide facility in Frisco. There is not sufficient information to substantiate that WESP is reasonable for secondary lead smelting facilities using blast and reverberatory furnaces at the additional cost of $16 to $40 million at each secondary lead smelter when the HEPA filter provides equivalent control efficiency at a much lower cost.

In addition, installing a WESP on the Exide facility for process emission control will have limited benefit because the vast majority of Exide's lead emissions are from fugitive sources. Air dispersion modeling conducted for this SIP revision demonstrates that with the controls in Agreed Order 2011-0521-MIS the ambient lead concentration in the Collin County lead nonattainment area will be below the 2008 lead NAAQS by the December 31, 2015, attainment date. The lead emissions that will remain after Exide has installed and is operating all the required controls included in the Agreed Order are sufficiently reduced for Collin County to demonstrate attainment of the 2008 lead NAAQS. It is unnecessary for a lower lead emission limit to be imposed on Exide.

A regenerative thermal oxidizer is typically used to control hydrocarbon emissions and would not provide any additional reductions in lead emissions. This SIP revision and the associated Agreed Order address the 2008 lead NAAQS. Including any additional control measures to reduce pollutants other than lead is beyond the scope of this SIP revision.

AIR DISPERSION MODELING

The EPA requested more information regarding 1) calculation of surface characteristics using an equivalent method to the AERSURFACE program; 2) raw meteorological data processed with AERMET; and 3) a description of fugitive emission sources.

This SIP revision contains detailed calculations of surface characteristics equivalent to the method in the AERSURFACE program. A description of fugitive emission sources is also contained in the SIP revision. The raw meteorological data processed with AERMET used in the SIP revision were sent to EPA Region 6 staff.

The EPA commented that there were differences in source representation between the modeling performed for the proposed SIP revision and modeling performed in 2009 and 2010 in support of the lead monitoring requirement.

On November 12, 2008, the EPA finalized the new 0.15 µg/m^3 lead NAAQS based on a rolling three-month average (73 FR 66964). In general, the rule requires source-oriented ambient air lead monitoring by January 1, 2010, at sites with actual annual lead emissions of one or more tpy. Exide was identified as having emissions at or above this level based on the reported 2007 TCEQ Emissions Inventory and/or 2006 TRI. The rule further requires that this monitoring be conducted at or near the maximum off-site ambient air lead concentration as predicted by modeling. To meet the rule requirement, modeling was performed by TCEQ staff in 2009 and again in 2010 based on permit representations and modeling programs that were available at the time. Exide provided updated values on source coordinates and parameters. Some of these values may have differed slightly from previous representations. Regardless of the slight differences, the modeling in support of the SIP revision uses the data available based on Exide's current authorizations.

The EPA, Downwinders at Risk, and two individuals commented that the TCEQ had not addressed the contribution of background lead concentrations in the modeling analysis.

In response to these comments, the TCEQ has addressed the contribution of background lead concentrations in the revised modeling analysis included with this SIP revision.

Using the procedure described in 40 CFR §51 Appendix W 8.2.2(b), a mean background concentration was determined at each monitor near the Exide site. Using data from 2006-2011, a background concentration of 0.028 µg/m^3 was calculated. This calculated background concentration was added to the maximum predicted concentration to evaluate compliance with the lead NAAQS.

The modeling in the June 3, 2011, SIP proposal included an evaluation of the potential impact of known mobile and stationary sources of lead emissions in the area near the Exide site, but the emissions were not quantified in the model. In addition, the TCEQ considered unknown sources but did not add a background concentration to represent these emissions. These decisions were made because the base-case analysis clearly demonstrated that Exide facilities and associated activities caused exceedances of the lead standard.

In addition, at the time of the June 3, 2011, SIP proposal, the reduction in emissions due to the tube sheeting and new baghouse media had not been quantified due to engineering design specifications not being available. No

reduction in emissions was attributed to these emission control measures in the modeling. By not accounting for proposed emissions control measures, the predicted impact is greater than the impact of background sources of lead. The TCEQ believes the modeling approach was reasonable.

However, since the SIP revision was proposed on June 3, 2011, Exide has had time to more completely develop the engineering design specifications at the Frisco site. As a result, Exide has provided updated emission limits taking into account the new tube sheeting and baghouse media. The modeling analysis in support of this SIP revision thus has more specific inputs related to emission controls and includes a background lead concentration based on monitoring to the maximum predicted concentration from modeling.

The EPA commented that the TCEQ did not use adequate receptor grid resolution in the modeling for demonstrating compliance with the lead NAAQS.

In the TCEQ's technical judgment, the receptor grid resolution was sufficient to determine the location and magnitude of the maximum predicted concentration based on emission characteristics and distance to receptors. The Exide site has been modeled with refined dispersion models many times over the past 20 years. The source locations, building locations, and stack parameters have been approximately the same between the different analyses. Using at least three different five-year meteorological data sets, three different dispersion models, and three different receptor resolutions (25, 50, and 100 meter), the location of the maximum predicted concentration has consistently been the location of the Eubanks monitor. To ensure that the maximum predicted concentration is captured for the demonstration of compliance with the lead NAAQS, additional receptors spaced 25 meters apart were placed in the vicinity of the location representing the Eubanks monitor.

The EPA and two individuals questioned whether all emission sources of lead were included in the Base Case modeling scenario. Exide commented that the fugitive emissions included in the Base Case modeling were over-estimated based on comparing Base Case modeling results (1.44 $\mu g/m^3$ maximum for rolling three-month average) to monitoring values since January 2009 (0.71 $\mu g/m^3$).

In order to determine if all sources of lead at the Exide site were accounted for, the TCEQ reviewed and analyzed monitoring data from the Eubanks, Ash Street, and Parkwood Street monitors for the 2006 through 2010 period. During that time, the highest rolling three-month average concentration (May through July 2008) was 1.26 $\mu g/m^3$. The highest monthly average concentration (May 2008) was 1.56 $\mu g/m^3$, and the highest 24-hour average concentration (June 5, 2008) was 3.42 $\mu g/m^3$. Modeling the maximum hourly allowable emission rates represented in the October 2010 permit alteration occurring every hour, which is conservative due to the high variability of emissions from the site, predicted a maximum rolling three-month average concentration of 0.84 $\mu g/m^3$, well below (50% less than) the monitored values. In addition, regular stack tests of the secondary smelter baghouse stacks demonstrated that the stack emissions were below their associated maximum hourly allowable emission rates. Given that modeling

predictions should always be higher than monitored concentrations due to the conservative treatment of source emissions, TCEQ staff concluded that a substantial emissions source or sources had not been accounted for in the modeling.

From review of the monitoring data, the TCEQ inferred that more emissions were occurring from the Exide site process area than were modeled. Initial modeling of the October 2010 permit alteration represented emissions showed that stack emissions contributed only a small portion to the maximum predicted concentrations. From analysis of the monitoring data and initial modeling, the TCEQ concluded that the most likely cause of the discrepancy between monitored concentrations and predicted modeled concentrations was the presence of a fugitive source of emissions located in the Exide site process area. Since the monitor captures 24-hour samples, it was difficult to pinpoint the possible location with hourly meteorology. However, the data suggest that the emissions originated from the western portion of the process area.

In conducting a model performance evaluation, the TCEQ relied upon monitoring data, source representations in the permit files, stack test data, and site production data to construct a modeled emissions scenario that would reasonably replicate actual monitored conditions. In constructing this emissions scenario, TCEQ staff included an additional fugitive emissions source. The modeling results with the additional fugitive source substantially agree with the monitoring data.

The purpose of the emissions scenario in the model performance evaluation (base case) was to propose just one explanation of the disparity of the initial modeling analysis and the monitoring data.

Exide commented that emission estimates for the demonstration of compliance with the lead NAAQS (future case) should be refined.

The demonstration of compliance with the lead NAAQS in the proposed June 3, 2011, SIP revision contained emission rate estimates based on the best information that was available at the time. Exide has provided more detailed information regarding construction design and emissions estimates. The TCEQ has reviewed this information and is using it in the demonstration of compliance with the lead NAAQS for the final SIP revision.

The EPA commented that the point source emission rates modeled, based on emission rates from stack testing, were not backed up with enforceable limits.

The commission disagrees that the point source emission rates modeled in the proposed and final SIP revision are not enforceable limits. Though the value of the emission rates are based on stack testing, and the value of the emission rates are limits and listed as such in the effective permits, the rates alone do not constitute continuously enforceable limits that can be simply enforced. Exide's permits (permits 1147A and 3048A) contain special conditions limiting production levels, process rates, operating temperature ranges, and fuel specifications. In cases where there is no direct calculation method to estimate emissions, such as in the

case of Exide's baghouses, the limits contained in the permit special conditions are the enforceable limits.

In *United States v. Louisiana-Pacific Corporation*, 682 F.Supp. 1122 (D. Colo. Oct. 30, 1987) and 682 F.Supp. 1141 (D. Colo. March 22, 1988), the Court discussed the type of permit restrictions that can be used to limit a source's potential to emit. The Court concluded that "not all federally enforceable restrictions are properly considered in the calculation of a source's potential to emit. While restrictions on hours of operation and on the amount of materials combusted or produced are properly included, blanket restrictions on actual emissions are not." *Louisiana-Pacific*, 682 F. Supp. at 1133. The Court held that Louisiana-Pacific's permit conditions, which limited carbon monoxide emissions to 78 tpy and volatile organic compounds to 101.5 tpy, should not be considered in determining "potential to emit," because these blanket emission limits did not reflect the type of permit conditions that restricted operations or production such as limits on hours of operation, fuel consumption, or final product. Furthermore, the second Louisiana-Pacific decision makes clear that the Court considered operational limitations to be valid permit limitations to rely on when calculating a source's potential to emit when such limits are federally enforceable. *Louisiana-Pacific*, 682 F. Supp. at 1159.

The *Louisiana-Pacific* court was guided in its reasoning by the D.C. Circuit's holding in *Alabama Power v. Costle*, 636 F. 2d 323 (D.C. Circuit 1979). Before *Alabama Power*, EPA regulations required potential to emit to be calculated according to a source's maximum uncontrolled emissions. In *Alabama Power*, the D.C. Circuit remanded those regulations to the EPA with instructions that the agency include the effect of in-place control equipment in defining potential to emit. The EPA went beyond the minimum dictates of the D.C. Circuit in promulgating revised regulations in 1980 to include, in addition to control equipment, any federally enforceable physical or operational limitation. The *Louisiana-Pacific* court found that blanket limits on emissions did not fit within the concept of proper restrictions on potential to emit as set forth by *Alabama Power*.

Moreover, the Court found that "a fundamental distinction can be drawn between the federally enforceable limitations which are expressly included in the definition of potential to emit and the [emission] limitations.... Restrictions on hours of operation or on the amount of material which may be combusted or produced ... are, relatively speaking, much easier to 'federally enforce.' Compliance with such conditions could be easily verified through the testimony of officers, all manner of internal correspondence and accounting, purchasing and production records. In contrast, compliance with blanket restrictions on actual emissions would be virtually impossible to verify or enforce." *Louisiana-Pacific*, 682 F. Supp. at 1133. Thus, the Court found that blanket emission limits were not enforceable as a practical matter. *Id*. Finally, the Court reasoned that allowing blanket emission limitations to restrict potential to emit would deprive EPA "of the benefit of the remedies Congress created for a violation of PSD." *Id*.

Since the demonstration of compliance with the lead NAAQS can only be performed through dispersion modeling and the model input requires an emission rate value, reasonable values for the emission rates must be developed. Using stack testing data to develop these rates is a common practice that the EPA has approved of in the past. The values developed from stack testing are typically validated through compliance testing. The EPA's comment that stack testing is the only means to make emission limits enforceable is in conflict with EPA rules and the findings of the *Louisiana-Pacific* decisions.

The EPA commented that the TCEQ did not follow provisions in 40 CFR §51.112.

The commission disagrees that it did not follow the provisions in 40 CFR §51.112. The control strategy and demonstration of compliance with the lead NAAQS contained in the proposed and final SIP revision contain all the elements specified in 40 CFR §51.112(a) and (b).

The EPA commented that the TCEQ did not follow provisions in 40 CFR §51 Appendix W, Guideline on Air Quality Models.

The TCEQ disagrees that it did not follow the provisions in 40 CFR §51 Appendix W, Guideline on Air Quality Models (GAQM) or deviate from EPA guidance when conducting the demonstration of compliance with the lead NAAQS. The TCEQ coordinated with EPA Region 6 through many verbal communications over several months. From these discussions of modeling-related issues, the TCEQ and EPA Region 6 verbally agreed on all issues except one - the averaging time of the emissions to be modeled. The TCEQ informally submitted to EPA Region 6 a modeling protocol on May 16, 2011, and an updated protocol February 2, 2012.

Though maximum hourly emission rates were modeled in this final SIP revision, the TCEQ contends that modeling 24-hour emission rates, as in the June 3, 2011, proposal, is equally valid.

In its comments, the EPA describes three elements in Table 8-1: *Model Emission Input Data for Point Sources* of the GAQM; however, there are four elements to the table. The element not contained in the EPA's comments is the first element of the table, "Averaging Time." The EPA has a long-standing and consistently applied policy to link enforceable limits demonstrating compliance of a NAAQS to a specific averaging time at least as long as the averaging time of the applicable NAAQS.

The EPA considered the averaging time of an emission limit as a vital element in guidance given to EPA regions and included averaging time of the NAAQS on the SIP approvability checklist. The EPA dispersion modeling guidance for NSR permits states that modeled emissions rates "must reflect the maximum allowable operating conditions as expressed by the federally enforceable emissions limit, operating level, and operating factor." The guidance gives special emphasis to the applicable averaging time of the emission rates. The EPA guidance on limiting a source's emissions states "the averaging time for all limits must be practicably enforceable. In other words, the averaging time period must readily allow for

determination of compliance. EPA policy expresses a preference toward short-term limits, generally daily but not to exceed one month." In regard to 24-hour NAAQS demonstrations, the EPA's policy for short-term emission limit was stated as "the only approach that seems to be protective is to model the target source, and nearby background sources, at their maximum potential to emit over 24 hours. We believe this is necessary for both permit and SIP modeling." Specific guidance from the EPA regarding modeling for the lead NAAQS was to model maximum rolling three-month emission rates because the NAAQS is based on a rolling three-month period. In each of the cases, where the issue is a demonstration of compliance with a NAAQS, EPA guidance has directly linked enforceable limits to the appropriate averaging time of the NAAQS in question.

Though some of the emission rates modeled for the June 3, 2011, SIP proposal were maximum 24-hour emission rates, the permit authorizing the emissions contains special conditions on daily finished lead production, hourly feed rates, emission control equipment specifications and maintenance practices, and recordkeeping of relevant operating parameters to ensure the emission limits are enforceable. By modeling emission rates with a shorter averaging time than the NAAQS (rolling three-month period), rates that are federally enforceable, and rates assumed continuous over all hours, the emission rates modeled complied with the requirements of Table 8-1 of the GAQM.

The EPA and three individuals commented on the 100% capture efficiency used for the Future Case modeling analysis.

The EPA commented that the Future Case modeling analysis did not include any modeled fugitive emissions from these sources since the installation of the full enclosure with negative pressure were assumed to result in 100% capture of fugitive emissions. The EPA stated it has accepted 100% capture of fugitive VOC emissions in other situations only with stringent requirements including a 15-square centimeter maximum leak area, minimum entrance and exit velocities, and limits on the size of egress points. The EPA stated that the TCEQ's modeling analysis showed that even very small uncontrolled fugitive lead emissions could prevent the area from reaching attainment. The EPA requested that the final SIP include a detailed plan demonstrating how the source would be able to achieve 100% capture efficiency.

One individual commented that 100% capture and control of fugitive emissions was unrealistic and noted that site visits by the EPA and the TCEQ's contractor, ERG, documented that 100% fugitive emission capture was not a plant priority.

Two individuals commented that 100% capture and control of fugitive lead emissions was overly optimistic because the work practices for areas that could generate fugitive emissions could allow lead dust to be tracked outside the building and, therefore, could not be controlled by the permanent total enclosure. The commenters also stated that the past and current operating practices at the Exide facility demonstrated improper control of fugitive emissions. The commenter noted that pictures taken during EPA inspections in 2009 and 2010 documented holes in roofs and walls of fugitive emissions enclosures, waste materials lying outside of controlled areas, doors either missing or left open, and material leaks. The commenters suggested that using the 90% capture and control efficiency recommended in the ERG report was more realistic.

In response to these comments, the TCEQ revised the Future Case modeling analysis used to demonstrate compliance with the 2008 lead NAAQS to account for potential fugitive emissions from buildings. The revised Future Case modeling analysis includes the fugitive emissions from roads and fugitive emissions from the buildings including un-captured process emissions and fugitive emissions from other sources within the buildings.

During the development of the newly promulgated revisions to the NESHAP for secondary lead smelters in 40 CFR Part 63, Subpart X, the EPA documented that compliance with these control requirements and work practices will result in 95% capture and control of building fugitive emissions (Docket no. EPA-HGQ-OAR-2011-0344-0163). In a letter dated February 16, 2012, EPA Region 6 confirmed that compliance with the requirements in 40 CFR Part 63, Subpart X would result in 95% capture of fugitive emissions and stated that the TCEQ would need to provide reasoned justification for the use of capture efficiency greater than 95%.

The TCEQ estimates that at most only 1% of the fugitive emissions from the buildings would escape to the atmosphere from the total enclosure and, therefore, the Future Case modeling analysis assumes 99% capture efficiency. The supporting documents for the newly promulgated revisions to 40 CFR Part 63, Subpart X indicate that total enclosures can provide up to 99% control of fugitive emissions from sources inside a building if the site adds supplementary controls and work practices beyond the NESHAP Subpart X requirements (Docket no. EPA-HQ-OAR-2011-0344-0163). In addition to operating required sources in a total enclosure as required in 40 CFR Part 63, Subpart X, Exide will also operate supplementary controls to address uncaptured process emissions and fugitive emissions from other sources within the buildings. Four supplementary controls and work practices will be implemented at the Exide facility. First, Exide will install high-speed roll-up doors and interlock systems to minimize the duration and extent of pressure variation due to open doors. Second, Exide will install a dock seal at each dock to eliminate the release of fugitive dust during loading and unloading. Third, Exide will designate lead-bearing material-handling equipment inside the building and reroute traffic within the plant to minimize material transfer, outdoor traffic, and the generation of fugitive emissions. Fourth, pick-up hoods are employed to capture process fugitives from the blast and reverberatory furnaces (i.e., charging, tapping, etc.), and these process fugitives are exhausted through control devices. These capture hoods are required under the 1997 NESHAP in 40 CFR Part 63, Subpart X (62 FR 32218) but are not required under the 2012 revisions. However, Exide's permit (1147A) requires the continued operation of these capture hoods. The combination of capture hoods, total enclosure, high-speed roll-up doors, dock seals, and work practices inside the building will ensure that the control efficiency of building fugitive emissions should maximize the overall efficiency. Given the supplementary controls required to address uncaptured process emissions and fugitive emissions from other sources within the buildings, the use of 99% control efficiency is reasonable and consistent with EPA guidelines.