

BOARD MEETING DATE: March 13, 1998

AGENDA NO. 42

REPORT: Annual RECLAIM Audit Report for the 1996 Compliance Year

SYNOPSIS: The annual report on the NO_x and SO_x RECLAIM program is prepared in accordance with Rule 2015 - Backstop Provisions. The report assesses emission reductions, average annual price and availability of RECLAIM Trading Credits, job impacts, compliance issues, and other measures of performance for the third year of this program.

COMMITTEE: Stationary Source, February 20, 1998, Reviewed

RECOMMENDED ACTION:
Approve the attached report.

Barry R. Wallerstein, D.Env.
Acting Executive Officer

CC:CM:MH

Background

The AQMD Governing Board adopted the RECLAIM program on October 15, 1993. The goal of RECLAIM is to provide facilities with added flexibility in meeting emission reduction requirements while lowering the cost of compliance. The RECLAIM program is designed to meet all state and federal requirements for clean air programs as well as other performance criteria for air quality improvement, enforcement, implementation costs, job impacts and protection of public health.

Since RECLAIM represents a significant departure from traditional command-and-control regulations, the RECLAIM rules provide for annual program audits in order to verify that the program objectives are being met. Rule 2015 requires annual audits focusing on specific issues, as well as a more comprehensive three-year audit. The results of the audits will be used to determine whether any program modifications are appropri-

ate. In addition, Health & Safety Code §40440.2 directs AQMD to present a progress report based upon the annual audits to its Governing Board on or before July 1, 1998.

The annual audit for the 1996 compliance year (RECLAIM's third year of implementation) has been prepared by AQMD staff. Pursuant to Rule 2015, the audit report is presented for a public hearing, and will be included in AQMD's annual performance report to the California legislature. A separate document satisfying the Rule 2015 requirement for a three-year audit and the Health & Safety Code §40440.2 requirement for a progress report will be presented to the Governing Board in a public hearing May 8, 1998. The three-year audit will provide a more comprehensive analysis of the program from adoption through December 1997.

Audit Findings

The audit findings indicate that the implementation of RECLAIM met its objective during the 1996 compliance year. Specifically, the analysis demonstrates that:

- RECLAIM is continuing to meet its emission reduction goals. Aggregate actual emissions from RECLAIM facilities were below allocations for the 1996 compliance year.
- An active trading market for RTCs has developed. More than \$42 million of RTCs have been traded since the adoption of RECLAIM with over \$21 million in trades occurring in calendar year 1997, and sufficient RTCs are available to meet the demand of RECLAIM facilities. Average prices, excluding RTCs which were transferred with a price of \$0 (such as transfers between facilities of common ownership), are well below the backstop price of \$15,000 per ton established in Rule 2015 and are summarized below:
 - \$227 per ton for 1997 NO_x RTCs;
 - \$1,880 per ton for 2010 NO_x RTCs;
 - \$64 per ton for 1997 SO_x RTCs; and
 - \$2,385 per ton for 2010 SO_x RTCs.
- As of the end of the 1996 compliance year, the RECLAIM Universe consisted of 329 facilities. The only universe changes in the 1996 compliance year were six shut-downs. RECLAIM was not cited as a contributing factor by any of the shut down facilities. Therefore, the fear expressed by some during program development that RECLAIM would encourage business flight has not been realized.
- RECLAIM has had minimal impact on employment. RECLAIM was cited by one facility operator as the cause of two lost jobs and one facility attributed one job

gained to RECLAIM during the 1996 compliance year.

- The majority of facilities complied with their allocations during the 1996 compliance year; with 49 of the 329 facilities exceeding their allocations. Most instances of non-compliance with allocations were mainly due to miscalculations, a lack of understanding of the proper use and application of RTCs and the missing data procedures (MDP), or problems encountered in electronic submittal of emissions data. This issue is being further evaluated as part of the analysis for the three-year audit that will be submitted to the Board in May 1998. Corrective measures, as appropriate, will be recommended at that time.
- RECLAIM continues to meet the requirement for equivalency with the AQMP. Allocation levels have changed slightly since program adoption based on updated control technology reviews and other new information, as well as changes to the RECLAIM Universe. However, these changes would also have occurred under command-and-control rules and therefore do not affect the ability of RECLAIM to achieve reductions equivalent to the AQMP as required by Health and Safety Code §39616.

AQMD staff will continue to monitor and assess the performance of the RECLAIM program and work closely with RECLAIM participants to ensure continued program success.

Attachment

Annual RECLAIM Audit Report for the 1996 Compliance Year

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

**Annual RECLAIM Audit Report for the
1996 Compliance Year**

March 13, 1998

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EXECUTIVE SUMMARY

Introduction

The Governing Board of the South Coast Air Quality Management District (AQMD) adopted the Regional Clean Air Incentives Market (RECLAIM) program on October 15, 1993. The RECLAIM program represents a significant departure from traditional command-and-control regulations. The goal of RECLAIM is to provide facilities with added flexibility in meeting emission reduction requirements while lowering the cost of compliance. This is accomplished by establishing facility-specific emission reduction targets without being prescriptive regarding the method of attaining compliance with the targets; each facility may determine for itself the most cost-effective approach to reducing emissions, including purchasing emission credits from facilities which reduce emissions below their target levels.

In order to ensure that RECLAIM is meeting all state and federal requirements as well as other performance criteria, Rule 2015 - Backstop Provisions, includes provisions for annual program audits focusing on specific topics, as well as a more comprehensive three-year audit. In addition, Health & Safety Code §40440.2 directs AQMD to present a progress report based upon the annual audits to its Governing Board. This document constitutes the Rule 2015 annual audit for the 1996 compliance year (January 1996 through June 1997). A separate document encompassing the Rule 2015 three-year audit and Health & Safety Code §40440.2 progress report will be presented to the Governing Board in a public hearing May 8, 1998.

Chapter 1: RECLAIM Universe

The NO_x and SO_x RECLAIM universe of sources decreased from 335 to 329 facilities during 1996 compliance year. The decrease was solely due to facility shutdowns; no inclusion or exclusion of any facilities during the 1996 compliance year. Six facilities ceased operations during the 1996 compliance year, a similar rate as in previous years. These shutdowns were due to business factors other than RECLAIM.

AQMD staff has performed an analysis of recent emissions data in order to determine if there are any additional facilities that should be included in the RECLAIM program. The analysis has revealed approximately 177 facilities with the potential for inclusion in the program. Currently, further analysis with input from the affected facilities is being performed to determine the final list of facilities that will enter the program.

Chapter 2: RTC Allocations and Trading

Allocations are the driving force of the RECLAIM program. They provide quantification of emission reductions required, the tools for compliance determination, and the trading resource. The primary source of RTCs available for trades is the aggregate of all RECLAIM facilities' allocations. The total RTC

supply did not change during 1997. The annual audit for the 1995 compliance year (*Second Annual RECLAIM Program Audit Report*, February 1997) included allocation and trading data through the end of the 1996 calendar year. This chapter focuses on the 1997 calendar year, which overlaps the 1996 and 1997 compliance years, in order to present the most current data available, as well as to avoid duplication from the previous audit.

The RTC trading markets have come to maturity under AQMD's laissez faire policy. Trading continues to be active in 1997 and a thriving market has taken shape. More than \$21 million in trades have occurred during 1997, representing approximately fifty percent of total value of trades from program inception through 1997. Market prices for NO_x and SO_x RTCs have been established, with low prices for current year RTCs and higher prices for future year RTCs in anticipation of a declining supply. In 1997, average prices for NO_x RTCs ranged from \$227 per ton for 1997 RTCs to \$1,880 per ton for 2010 RTCs. Average prices for SO_x RTCs are as low as \$64 per ton for 1997 RTCs, yet, due to an expected shortage, prices for later year RTCs are as high as \$2,393 per ton for 2003 RTCs and \$2,385 per ton for 2004 and beyond RTCs. These prices are well below the backstop price of \$15,000 per ton. The supply of RTCs offered for sale on the market has been adequate to meet the demand of RECLAIM facilities.

Chapter 3: Emission Reductions

For the 1996 compliance year, aggregate emissions from RECLAIM facilities were below aggregate allocations for the RECLAIM universe and were also well below the target emissions in the 1994 Air Quality Management Plan (AQMP). Furthermore, emission levels were comparable to 1993 levels, the last year prior to implementation of RECLAIM, consistent with the first two compliance years. Analysis of the emissions data also suggests that the impact of Missing Data Procedures (MDP) is declining.

Chapter 4: New Source Review Activity

RECLAIM is designed to comply with the requirements of both state and federal laws while providing flexibility to facilities in managing their operations. Review of New Source Review (NSR) activity in the 1996 compliance year shows that no new or existing facilities joined the RECLAIM program. However, a total of 50 RECLAIM facilities incurred NSR emission increases due to expansions or modifications. These data indicate that RECLAIM has not inhibited the construction and operation of new or modified sources at the RECLAIM facilities in the Basin.

RECLAIM is required to demonstrate compliance with federal NSR requirements by meeting a 1.2-to-1 offset ratio for NO_x and SO_x emission increases on a programmatic basis (aggregate basis rather than individual). RECLAIM far exceeded the required 1.2-to-1 offset ratio during the 1996 compliance year for both NO_x (49-to-1 achieved) and SO_x (64-to-1 achieved), demonstrating federal equivalency. In addition to complying with the offset ratio, RECLAIM requires BACT for all new or modified sources with emission increases and restricts trading RTCs from inland to coastal facilities in cases of emission increases above the facility's 1994 allocation plus non-tradable credits in order to ensure

net ambient air quality improvement within sensitive zones. The evaluation of NSR activity during the 1996 compliance year shows that RECLAIM is in compliance with both state and federal NSR requirements.

Chapter 5: Compliance

Emissions monitoring is the tool to demonstrate allocation compliance under RECLAIM. Specific monitoring approaches were built into the RECLAIM structure to assure a high level of confidence in emissions quantification. In order to determine compliance status, AQMD staff conducted comprehensive annual audits of all emissions reports from every RECLAIM facility. The results of the audits for the past three years reveal that the overall RECLAIM emission goal was met each year.

For the 1996 compliance year, preliminary audit result showed that 49 facilities exceeded their annual allocations. The main cause for these exceedances was due to the application of Missing Data Procedures (MDP) in cases where the required continuous emissions monitoring systems (CEMS) were not certified or where emissions were not electronically reported within the specified deadlines. Despite the use of MDP, the emissions for the 1996 compliance year were well below the targeted emissions in both the 1994 and 1997 AQMP.

Chapter 6: Job Impacts

During the 1996 compliance year, one RECLAIM facility attributed one job gain to RECLAIM for a new employee to handle RECLAIM compliance issues. One RECLAIM facility attributed two job losses to RECLAIM as a result of profit reduction due to RECLAIM compliance costs. Furthermore, six RECLAIM facilities shut down or went out of business in 1996. None of these shutdown facilities cited RECLAIM as a contributing factor in their decision to cease operation.

Chapter 7: Air Quality and Public Health Impacts

Rule 2015(b)(1) requires AQMD to evaluate the issues related to emission trends, seasonal fluctuations, geographic distribution of emissions, per capita exposures and toxics impacts as a part of RECLAIM annual audits, in an effort to assess RECLAIM's impacts on air quality and public health.

There is an overall downward trend in emissions from RECLAIM facilities over the period from 1989 through 1996. It is expected that RECLAIM facilities will further decrease their emissions to comply with declining allocations. Analysis of quarterly emissions in the 1996 calendar year reveals that there is no significant seasonal shift in emissions, dispelling concerns about facilities shifting emissions from the winter season into the summer ozone season, thus exacerbating air quality. Furthermore, AQMD staff analyzed quarterly emission maps, which were prepared pursuant to Rule 2015(b)(2), for any discernible changes in the geographic distribution of emissions. The analysis of the emission maps does not show any distinct shift in the geographic distribution of emissions.

Analysis of per capita exposure in 1996 shows that the Basin has already achieved the 50% reduction target required by the California Clean Air Act

(CCAA) for ozone; per capita exposure in 1996 was 20.3 hours, far below the 50% reduction target of 40.2 hours. AQMD staff also evaluated the toxics impacts of implementation of RECLAIM pursuant to Rule 2015. RECLAIM facilities are subject to the same air toxic regulations as other sources in the Basin. Therefore, there is no additional toxics impact due to the implementation of the RECLAIM program.

Chapter 8: Conclusions and Recommendations

This review of implementation of the RECLAIM program during the 1996 compliance year reveals that the program has resulted in emission reductions below the level targeted in the 1994 AQMP for the command-and-control rules and control measures it subsumed. Therefore, implementation of RECLAIM is not likely to result in a delay of compliance with the federal Clean Air Act or the California Clean Air Act. Furthermore, these emission reductions were achieved at less cost than anticipated under the command-and-control regulatory approach, as illustrated by the high volume of low-price RTC transactions recorded.

The monitoring elements of RECLAIM are being implemented successfully, although there were some delays in certifying CEMS. Appropriate rule amendments were implemented to equitably address these difficulties. RECLAIM's enforcement has been successful at maintaining a high level of compliance. RECLAIM has not resulted in a greater loss of jobs or shift from higher-skilled to lower-skilled jobs than would have occurred had RECLAIM not been adopted. Thus, overall, the annual audit results indicate that the implementation of RECLAIM during the 1996 compliance year was highly successful at achieving program goals.

Although RECLAIM has met all of the design criteria, AQMD is continuously striving to augment the program. Therefore, staff recommends implementation of the following program enhancements:

- Investigate the feasibility of replacing AQMD's RECLAIM electronic bulletin board with an internet web site and the possibility of providing an electronic RTC trading functionality; and
- Investigate the possibility of additional monitoring requirement options to minimize implementation costs as well as ensure the enforceability of the program.

INTRODUCTION

The Regional Clean Air Incentives Market program (RECLAIM), adopted in October 1993, replaces certain command-and-control regulations with a new market incentives program for facilities which meet the inclusion criteria. The goal of RECLAIM is to provide facilities with added flexibility in meeting emission reduction requirements and to lower the cost of compliance. The RECLAIM program was designed to meet all state and federal requirements for clean air programs, as well as other performance criteria such as equivalent air quality improvement, equivalent enforcement, lower implementation costs, lower job impacts, and no adverse public health impacts.

Since RECLAIM represents a significant change from traditional command-and-control regulations, the RECLAIM rules include provisions for program audits in order to verify that the RECLAIM objectives are being met. The rules provide for both annual audits and a more comprehensive audit of the first three years of program implementation. The audit results are used to help determine whether any program modifications are appropriate. In addition, Health and Safety Code §40440.2 directs AQMD to present a progress report based upon the annual audits to its Governing Board.

This report presents the annual audit of RECLAIM's third compliance year (January 1, 1996 through June 30, 1997), also known as the 1996 compliance year. As required by Rule 2015(b)(1), this audit assesses:

- Emission reductions;
- Per capita exposure to air pollution;
- Facilities permanently ceasing operation of all sources;
- Job impacts;
- Average annual price of each type of RTC;
- Availability RTCs;
- Toxic risk reductions;
- New Source Review permitting activity;
- Compliance issues;
- Emission trends/seasonal fluctuations;
- Emission control requirement impacts on stationary sources in the program compared to other stationary sources identified in the AQMP; and
- Effectiveness of enforcement and protocols.

Staff is preparing the Annual RECLAIM Audit Report for the 1996 Compliance Year (Annual Audit) and the RECLAIM Program Three-Year Progress Report and Audit (Three-Year Audit) simultaneously. The Annual Audit focuses on RECLAIM's 1996 compliance year while the Three-Year Audit incorporates the three year audit required by Rule 2015 and the progress report required by Health & Safety Code §40440.2, and provides an in-depth review of the first

three years of program implementation *in toto*. The Annual Audit will be presented to the AQMD Governing Board in a public hearing on March 13, 1997. The Three-Year Audit revisits the first three annual audits in greater detail and examines trends through the years. The Three-Year Audit will be presented to the Governing Board in a public hearing May 8, 1998. The Three-Year Audit will be followed by additional annual audits.

The Annual Audit is organized into the following chapters:

1. RECLAIM Universe
This chapter discusses changes in the universe of RECLAIM sources which occurred during the 1996 compliance year.
2. RTC Allocations and Trading
This chapter summarizes changes in emissions allocations in the RECLAIM universe, RTC trading activity, and the price, availability, and supply of RTCs.
3. Emissions Reductions
This chapter assesses emission trends and reductions for RECLAIM sources and emission control requirement impacts on these sources.
4. New Source Review Activity
This chapter summarizes NSR activity at RECLAIM facilities.
5. Compliance
This chapter discusses compliance activities and the compliance status of RECLAIM facilities, and evaluates the effectiveness of compliance and the NO_x and SO_x monitoring, reporting, and recordkeeping protocols.
6. Job Impacts
This chapter addresses job impacts.
7. Air Quality and Public Health Impacts
This chapter discusses air quality trends in the South Coast Air Basin, seasonal and geographic emission trends for RECLAIM sources, per capita exposure to air pollution, and the toxics impacts of RECLAIM sources.
8. Conclusions and Recommendations
This chapter summarizes the audit conclusions and presents recommendations based on the audit results.

CHAPTER 1 RECLAIM UNIVERSE

Summary

The NO_x and SO_x RECLAIM universe of sources decreased from 335 to 329 facilities during 1996 compliance year. The decrease was solely due to facility shutdowns; no inclusion or exclusion of any facilities during the 1996 compliance year. Six facilities ceased operations during the 1996 compliance year, a similar rate as in previous years. These shutdowns were due to business factors other than RECLAIM.

AQMD staff has performed an analysis of recent emissions data in order to determine if there are any additional facilities that should be included in the RECLAIM program. The analysis has revealed approximately 177 facilities with the potential for inclusion in the program. Currently, further analysis with input from the affected facilities is being performed to determine the final list of facilities that will enter the program.

Background

RECLAIM was designed to take the place of traditional “command and control” rules for a defined list of facilities participating in the program (the RECLAIM “universe”). In general, facilities are subject to RECLAIM if they have NO_x or SO_x emissions greater than four tons for 1990 or any subsequent year. However, certain facilities are categorically excluded from RECLAIM. Furthermore, a facility may be removed from the RECLAIM universe pursuant to Rule 2001(b) if an application for exclusion was filed with AQMD prior to January 1, 1996 and:

- The facility demonstrates that due to the installation of control equipment prior to RECLAIM rule adoption, future emissions will be below four tons per year; or
- The facility is discovered by AQMD staff to have been mis-classified as a RECLAIM facility. Reasons for correcting misclassification include corrected emissions data indicating emissions below four tons per year, new information that the facility belongs to an exempt category, or going out of business before the start of the program; or
- The facility ceased operations prior to January 1, 1994 if assigned to Cycle 1 or before July 1, 1994 if assigned to Cycle 2 and permanently retires its RTCs.

Facilities which permanently cease operations which emit RECLAIM pollutants and go out of business are removed from the active emitting RECLAIM universe, but may retain their RTCs and participate in trading.

A facility may voluntarily choose to join RECLAIM, regardless of its emission level. Additionally, a facility may be required to enter the RECLAIM universe if:

- It increases its emissions above the four-ton threshold or ceases to belong to an exempt category; or
- The facility is discovered by AQMD staff to meet the applicability requirements of RECLAIM, but was initially mis-classified as a non-RECLAIM facility.

Universe Changes

The only changes to the RECLAIM universe during the 1996 compliance year were six facility shutdowns. Thus, the change in the RECLAIM universe during the 1996 compliance year was from 335 facilities to 329 facilities, as summarized in Table 1-1. A list of facility in the RECLAIM universe as of June 30, 1997 is provided in Appendix A.

Table 1-1
RECLAIM Universe Changes for the First Three Compliance Years

	NOx Facilities	SOx Facilities	Total Facilities
Start of 1996 Compliance year	334	39	335
Inclusions - 1996	0	0	0
Exclusions - 1996	0	0	0
Shutdowns - 1996	5	2	6
End of 1996 Compliance year	329	37	329

A total of six RECLAIM facilities have permanently ceased operations and gone out of business during the 1996 compliance year. Of these six facilities, four were in the NOx market, one was in the SOx market, and one was in both the NOx and SOx markets. AQMD staff contacted the facility operators in order to ascertain the reasons for the closures. None of the six facilities cited RECLAIM as cited as a contributing factor. The facilities which shutdown during the 1996 compliance year and the reasons cited for closing down are included in Appendix B.

Pending Potential Inclusions to the RECLAIM Universe

AQMD Rule 2001(b) specifies that the Executive Officer will include all facilities that submit emissions fee billing (EFB) data showing four or more tons of NOx or SOx emissions for the year 1990 or any subsequent year in the RECLAIM program unless they meet one of the exclusion criteria. EFB data from 1990, 1991, and 1992 were used in developing the original RECLAIM universe.

AQMD staff has recently performed an analysis of more recent EFB data in order to determine if there are any additional facilities that should be included in the RECLAIM program. Data was extracted for all facilities that are not currently in the RECLAIM universe and reported emissions of four or more tons per year of NOx or SOx for the years 1992, 1993, 1994-95, or 1995-96 (the EFB reporting period changed from calendar year to fiscal year in 1994). Data for 1992 was evaluated a second time to ensure that no potential RECLAIM facilities had been

missed. As required in Rule 2001, the emissions data totals used in this analysis for each facility did not include emissions from mobile equipment or equipment exempt from written permits.

The data revealed a total of 512 facilities which were currently not in the RECLAIM program and reported emissions of four or more tons per year. The list of 512 facilities was screened to eliminate any facilities which were exempt, inactive, or excluded, reducing the list to 177 facilities. On January 20, 1998 a letter and survey form were sent to each of the remaining 177 facilities explaining the requirements which would potentially include them in RECLAIM. The survey requested the facilities to verify that the emissions data they had submitted were accurate and also allowed them to claim exemption per Rule 2001(i) if they met any of the exemption criteria. A final list will be established for inclusion into the RECLAIM universe once the survey forms are returned to AQMD. A public workshop has been scheduled for the affected facilities on March 11, 1998 to review the requirements of the RECLAIM program.

The emissions associated with the 177 facilities currently identified for potential inclusion into the RECLAIM universe are listed in Table 1-2. It should be noted that this current list does not yet reflect any input from the affected facilities and could be modified.

**Table 1-2
Potential Inclusions in the RECLAIM Universe**

	Number of Possible Facilities	Emissions Associated with these Facilities tons/year¹	Percent of Total RECLAIM Allocations
NOx RECLAIM	171	3,480	8.67%
SOx RECLAIM	16	239	2.31%

¹ These emissions figures are the emissions reported by the facilities in their Emissions Fee Billing reports. The highest reported emissions for each facility were selected from the following reporting years: 1992, 1993, 1994-95, and 1995-96 (AQMD changed from calendar year to fiscal year emission reporting in 1994).

CHAPTER 2

RTC ALLOCATIONS AND TRADING

Summary

Allocations are the driving force of the RECLAIM program. They provide quantification of emission reductions required, the tools for compliance determination, and the trading resource. The primary source of RTCs available for trades is the aggregate of all RECLAIM facilities' allocations. The total RTC supply did not change during 1997. The annual audit for the 1995 compliance year (Second Annual RECLAIM Program Audit Report, February 1997) included allocation and trading data through the end of the 1996 calendar year. This chapter focuses on the 1997 calendar year, which overlaps the 1996 and 1997 compliance years, in order to present the most current data available, as well as to avoid duplication from the previous audit.

The RTC trading markets have come to maturity under AQMD's laissez faire policy. Trading continues to be active in 1997 and a thriving market has taken shape. More than \$21 million in trades have occurred during 1997, representing approximately fifty percent of total value of trades from program inception through 1997. Market prices for NO_x and SO_x RTCs have been established, with low prices for current year RTCs and higher prices for future year RTCs in anticipation of a declining supply. In 1997, average prices for NO_x RTCs ranged from \$227 per ton for 1997 RTCs to \$1,880 per ton for 2010 RTCs. Average prices for SO_x RTCs are as low as \$64 per ton for 1997 RTCs, yet, due to an expected shortage, prices for later year RTCs are as high as \$2,393 per ton for 2003 RTCs and \$2,385 per ton for 2004 and beyond RTCs. These prices are well below the backstop price of \$15,000 per ton. The supply of RTCs offered for sale on the market has been adequate to meet the demand of RECLAIM facilities.

Background

RTC trading provides each facility the flexibility to determine, based on its unique operational needs, how best to meet its emission reduction goals, either by trading RTCs or reducing actual emissions. Thus, the trading aspect of RECLAIM is a key element in enabling facilities to achieve RECLAIM compliance at minimum cost with maximum flexibility.

RTCs, denominated in pounds of NO_x or SO_x within a specified year, are issued to each RECLAIM facility upon entry into the program based upon the facility's operational history. Each facility with Emission Fee Billing (EFB) reports on file with AQMD prior to entering the RECLAIM universe receive an RTC allocation for the compliance year of entry and each subsequent year, based upon the methodology specified in Rule 2002(c) through (f). The allocations decline annually through the 2003 compliance year, then remain constant during subsequent years. Each RTC may only be used for emissions occurring within the term of the RTC. This structure of pre-allocation for future years provides the participating facilities with unprecedented knowledge about their future

emission reductions requirements. With known emission goals, a facility can plan for future operations on an annual basis and secure any required RTCs through trades. Any person may choose to participate in the RTC trading market. In addition to RECLAIM facilities, brokers, auctioneers, and entrepreneurs have been active participants of the market.

RTC Allocations and Supply

RECLAIM was designed to achieve emission reductions equivalent to the rules and control measures applicable to the universe of sources that would have been implemented by AQMD in the absence of RECLAIM. Therefore, the methodology for determining allocations was developed to incorporate the emission reduction requirements of the subsumed rules and control measures. This approach ensures both programmatic equivalence in terms of emission reductions and equity and fairness between RECLAIM participants on one hand and between RECLAIM and non-RECLAIM facilities on the other.

Rule 2002 - Allocations for Oxides of Nitrogen (NO_x) and Oxides of Sulfur (SO_x) establishes the methodology for determining allocations for RECLAIM facilities. The method for determining the allocations is based primarily on historical activity levels during "peak" activity years and the control level that would be required by the subsumed rules and control measures.

The primary source of RTCs available for trades is the aggregate of all RECLAIM facilities' adjusted allocations. The RTC supply has been supplemented in previous compliance years by the conversion of ERCs owned by RECLAIM facilities (automatic) or owned by non-RECLAIM facilities (per facility request), and by conversion of mobile source ERCs. Furthermore, a variety of current and future credit programs (e.g., Area Source Credits, Air Quality Investment program, and the Intercredit Trading program) are expected to provide an additional supply of emission credits to the RECLAIM market.

Total allocations remained unchanged during the 1996 compliance year because none of the events which trigger allocation changes occurred. The only changes to the RECLAIM universe were six shutdowns, which do not result in allocation changes. There were no inclusions of new facilities into the RECLAIM universe or exclusions of facilities from the universe. No mobile source emission reduction credits or area source credits were converted to RTCs and the allocation adjustments resulting from technology reviews were completed prior to the 1996 compliance year.

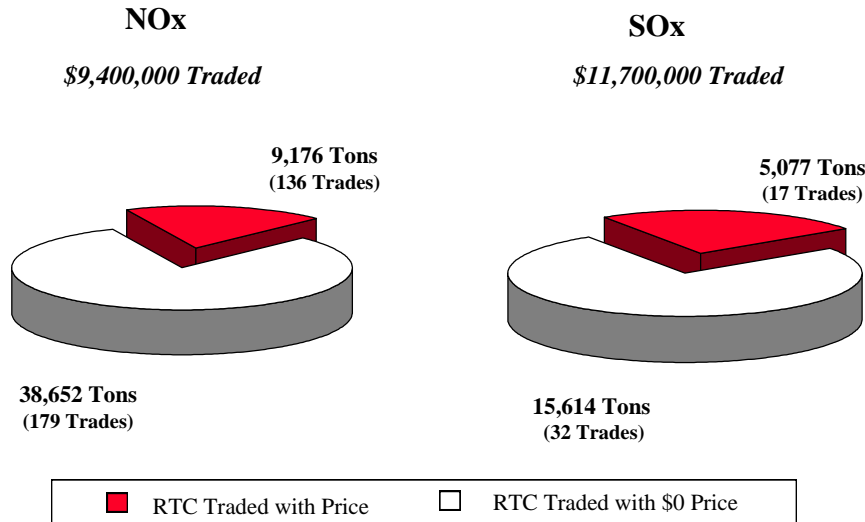
RTC Trading

The annual audit for the 1995 compliance year included allocation and trading data through the end of the 1996 calendar year. This analysis focuses on the 1997 calendar year in order to present the most current data available, as well as to avoid duplication from the previous audit.

The trading markets continued to be active during 1997. More than 350 trades totaling 68,500 tons of NO_x and SO_x RTCs were transferred in 1997. These trades included both RTCs traded with prices and transfers with \$0 price, such as transactions between two facilities under common ownership. The total of all reported prices for all RTCs traded in 1997 exceeded \$21 million, approximately

half of the value of trades conducted through the end of 1997. Figure 4-1 summarizes the overall 1997 trading activity by pollutant.

Figure 2-1
1997 Trading Activity



Analyses of the NOx and SOx future year RTC trades were conducted to identify trading trends. These analyses focused on transactions involving RTCs with expiration dates of year 2000 and beyond and total trade prices of \$10,000 or greater. These analyses indicate that in 1997 large refineries and utilities were the major buyers of future year NOx and SOx credits. Since the majority of these trades were processed through brokers and RTC owners generally transfer their RTCs to the brokers without prices, it is difficult to identify the seller(s) of the RTCs traded with price. However, based on a review of the allocation changes of RECLAIM facilities, the facilities that sold the most RTCs were small refineries and facilities that have ceased operations.

In July 1996, Rule 2002 was amended to specify that RECLAIM will be maintained beyond 2010. As a result, RTCs for each year after 2010 were issued equivalent to the amount issued for year 2010. Trading of these beyond 2010 RTCs were part of the active market in 1997. They were traded in lump sums (identified as RTCs with expiration date of All Years After 2010). However, the majority of these beyond 2010 RTC trades were the transfer of RTCs associated with previous transfers of credits through 2010 for which the trading partners had agreed to extend when and if RECLAIM was extended.

RTC Prices

The RTC markets have flourished and matured. Market prices have been established for both NOx and SOx RTCs. The prices of 1996 and 1997 NOx RTCs were very low (less than \$250/ton), however, the prices of future-year NOx RTCs increased with the vintage of the credits. SOx RTC prices followed a similar pattern to NOx prices, with lower prices for 1996 and 1997 RTCs (less than \$150/ton) and significantly higher prices for later years.

The average price for NOx RTCs has decreased from year to year for credits expiring in and before 1998. On the other hand prices for credits expiring in 1999 through 2002 increased from year to year. However, for credits expiring 2003 and later, prices decreased during the 1996 trading year but then increased to their highest level in the 1997. Average prices for SOx RTCs changed dramatically since the 1995 trading year. Prices decreased for the earlier year credits. Credits which expire in 1999 and beyond were traded at much higher prices and the prices have continued to increase with each year. Figures 2-2 and 2-3 show the changes in average prices for NOx and SOx RTCs respectively.

Both NOx and SOx prices have tended to level off at approximately constant values commencing around year 2000. This is because the vast majority of trades involving credits for these years have been executed in “blocks”—these years are far enough in the future that facilities have not yet identified specific needs for individual years. Rather, some facilities are purchasing credits in constant amounts for each post-2000 year as a component of long range planning and/or as investments. As time progresses and these distant years become near-future years, these block trades will lose their dominance. Trades will begin to reflect specific, short-term compliance needs rather than general long-range strategies. Increasing market familiarity will also contribute to more dynamic and creative trading.

Figure 2-2
Yearly Average Prices for NOx RTCs

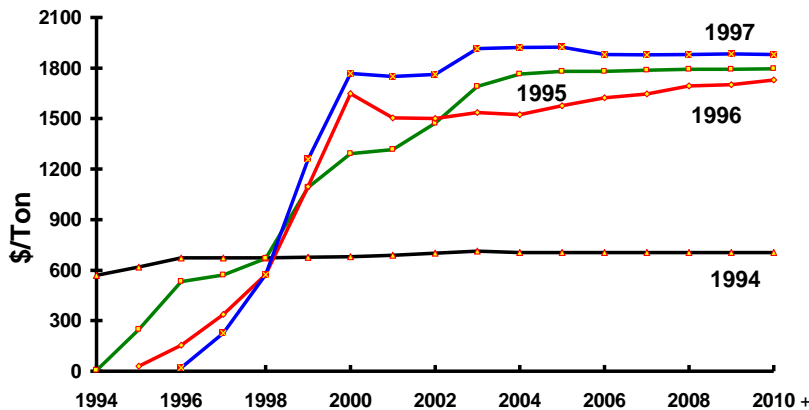
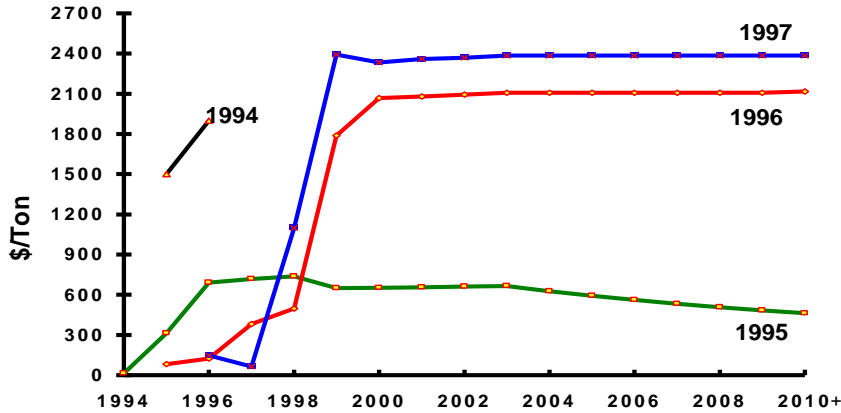


Figure 2-3
Yearly Average Prices for SOx RTCs



RTC Availability

The quantity of RTCs offered for sale in 1997 continued to be noticeably more than the quantity purchased by RECLAIM facilities. This indicates that sufficient RTCs were available for those facilities who wished to purchase them for compliance use. (The excess RTCs are held by non-RECLAIM facilities, brokers, or in facilities' Certificate Accounts). Figures 2-4 and 2-5 show the availability of RTCs by comparing the supply of RTCs offered for sale to the demand for RTCs by RECLAIM facilities.

When the July 1996 RECLAIM amendments extended the program beyond 2010 a provision was included which automatically issued post-2010 RTCs to each RECLAIM facility which had been issued an allocation based upon its operational history. These facilities were allocated RTCs in each post 2010 year in the same amount as they had previously received for 2010. This extended the pool of RTCs available in the years 2003 through 2010 into the future, but did not impact the availability of RTCs in any one year.

Figure 2-4
NOx RTC Availability

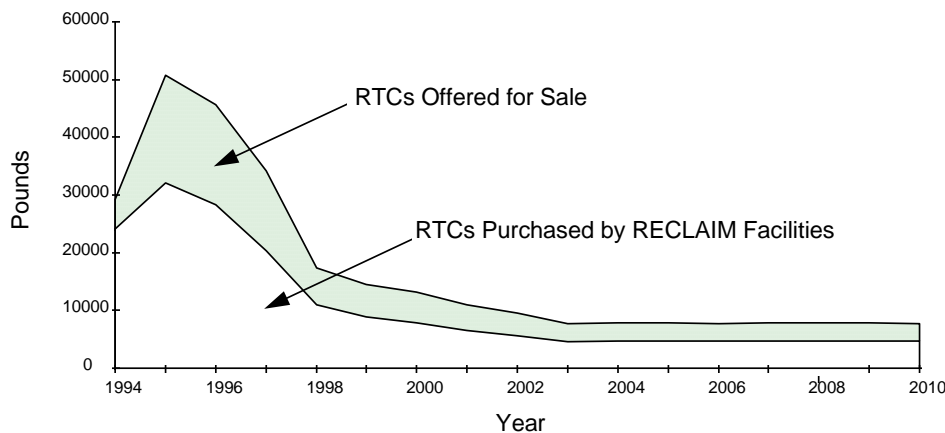
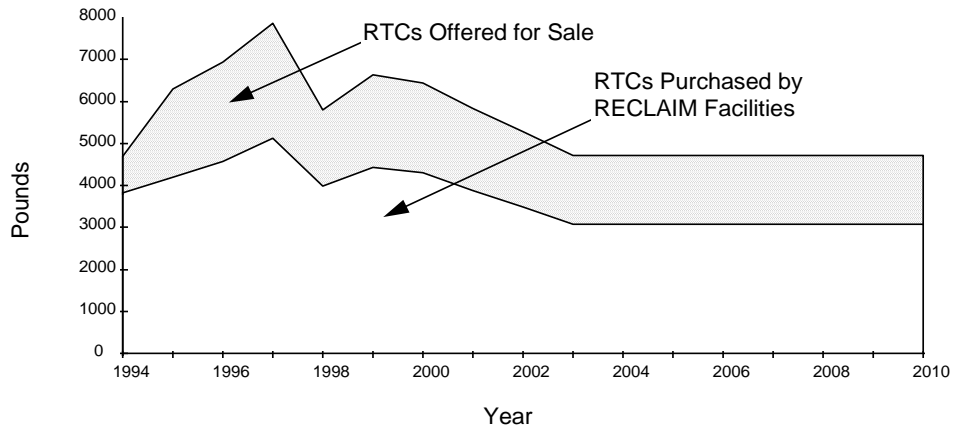


Figure 2-5
SOx RTC Availability



CHAPTER 3 EMISSION REDUCTIONS

Summary

For the 1996 compliance year, aggregate emissions from RECLAIM facilities were below aggregate allocations for the RECLAIM universe and were also well below the target emissions in the 1994 and 1997 Air Quality Management Plans (AQMPs). Furthermore, emission levels were comparable to 1993 levels, the last year prior to implementation of RECLAIM, consistent with the first two compliance years. Analysis of the emissions data also suggests that the impact of Missing Data Procedures (MDP) is declining.

Background

One key objective of the annual program audit is to assess whether RECLAIM is achieving the targeted emission reductions. At the beginning of the program, each RECLAIM facility received an annual allocation for each year from 1994 through 2010 (subsequently extended indefinitely). These annual allocations reflect the required emission reductions which are equivalent to the level of reductions required under the traditional command-and-control requirements in the 1991 AQMP.

Emissions Audit Process

Each year since the beginning of the program, AQMD has conducted audits of the data submitted by RECLAIM facilities to ensure the integrity and reliability of the data. The process begins when each facility submits a comprehensive annual emission report, the Annual Permit Emissions Program (APEP) report, within sixty days of the end of each compliance year. This report represents the final opportunity for facilities to correct any errors in their previously reported emissions during the compliance year.

AQMD staff reviewed each APEP report submitted for the 1996 compliance year to assess the accuracy of reported emissions. This includes field inspections to check the equipment, monitoring devices, and operation records. It also involves verification of emissions data reported during the course of the year (daily, monthly, and yearly). The audit process revealed that some facilities have made errors in quantifying their emissions, such as arithmetic errors, use of inappropriate emission factors, or inappropriate use of missing data substitution. Therefore, some of the reported emissions in the APEP reports had to be adjusted after completion of the audits.

When AQMD staff identified changes to be made to the emissions data in the 1996 APEP reports, facilities were provided an opportunity to review the changes and to present additional data or arguments supporting the data in their APEP reports. RECLAIM's thorough emission reporting requirements reinforced with the rigorous audit process ensure valid and reliable emissions data.

Emission Trends and Analysis

RECLAIM demonstrates equivalency in emission reductions compared to the command-and-control measures it subsumed on an aggregate basis by ensuring that aggregate annual emissions are below the target emissions in the 1994 and 1997 AQMPs. Allocations are based on the emission reductions which were projected to be achieved through implementation of the traditional rules and control measures identified in the AQMP but subsumed by RECLAIM.

Table 3-1 summarizes emissions from RECLAIM facilities for the 1996 compliance year. Emissions in the 1996 compliance year were well below the total RTC supplies at 24,730 tons for NO_x and 6,484 tons for SO_x, leaving 23% and 27% of RTCs unused for NO_x and SO_x respectively. RECLAIM facilities did not exceed their allocations on an aggregate basis during the third compliance year, successfully achieving program emission reduction goals and demonstrating equivalency to traditional command-and-control measures. Concerns were raised during RECLAIM program development that facilities might increase emissions during the early years. Table 3-1 shows that emission levels for the 1996 compliance year of the program were lower than 1993 levels.

Table 3-1
1996 Annual Emissions¹ (tons)

	NO _x	SO _x
Annual Emissions²	24,730	6,484
Total RTCs³	31,935	8,892
Unused RTCs	7,287	2,410
% Unused RTCs	23%	27%
% Change in Emissions from 1993⁴	-1.0%	-9.5%

1. The RECLAIM universe is divided into two cycles with compliance schedules staggered by six months. The 1996 compliance year included emissions from cycle 1 facilities between January 1 and December 31, 1996 and from cycle 2 facilities between July 1, 1996 and June 30, 1997.

2. 1996 data has not been fully audited for accuracy

3. Total RTCs = Allocations + Converted ERCs

4. 1993 Emissions: 24,982 tons for NO_x and 7,167 tons for SO_x

Impact of Missing Data

Missing Data Procedures (MDP) are designed to provide substitute data for periods when emission monitoring systems fail to yield a valid emissions measurement. There are several levels within the MDP that are applied depending on the duration of missing data periods and availability of the monitoring systems. As the duration of missing data periods gets longer and the availability of monitoring systems gets lower, MDP becomes more conservative. For example, many facilities did not have their CEMS certified by the regulatory deadline of July 1, 1995. Therefore, they had to apply MDP to calculate

substitute data for the remainder of the compliance year. Because their CEMS did not have any prior valid data and thus had zero availability, they had to apply the most conservative procedure to estimate emissions. Unlike in 1995, most CEMS were certified in time to report actual emissions for the 1996 compliance year. Therefore, missing periods were intermittent and lasting only a couple of days per occurrence on average, resulting in system availability over 90%. With higher availability and shorter missing periods, facilities were able to apply less conservative procedures to estimate emissions that are more representative of the actual emissions. As a result, the MDP impact for 1996 emissions is estimated to be lower than for 1995.

Sixty-one NO_x facilities and 11 SO_x facilities reported emissions using MDP in 1996. This is comparable to the number of facilities that applied MDP in calculating 1995 emissions—65 NO_x facilities and 12 SO_x facilities. However, the portions of emissions attributed to MDP are lower for 1996 compared to those for 1995. It was estimated that 23% of NO_x emissions and 40% of SO_x emissions were reported using MDP in 1995. As for 1996, it is estimated that 13% of NO_x emissions and 9% of SO_x emissions are attributable to MDP. This supports the hypothesis that facilities were able to apply less conservative missing data procedures in 1996 because of higher availability and shorter missing periods per occurrence as discussed above.

It is important to note that the portions of annual emissions that are attributed to MDP include actual emissions from the sources in addition to the overestimated emissions due to MDP bias. For example, it is estimated that 13% of NO_x emissions were reported using MDP in 1996. This does not mean that 13% of the reported 1996 NO_x annual emissions are not real. A portion of the 13% is the overestimated emissions due to MDP bias but the majority of the 13% is actual emissions from the sources. Unfortunately, the extent to which actual emissions have been overestimated cannot be readily estimated because the extent of this effect varies widely depending on source categories and operating parameters. As an example, refineries tend to operate at maximum capacity for 24 hours/day and 7 days/week barring major breakdowns or other unforeseeable circumstances. Therefore, missing data emissions calculated for such facilities could be more reflective of the actual emissions than those calculated for facilities that do not operate on a continuous basis.

Emission Control Requirements

Although most RECLAIM facilities are still at a stage of examining the feasibility and cost-effectiveness of implementing control technologies, some facilities have already committed capital to install or upgrade air pollution control equipment instead of purchasing RTCs. Three basic types of emission control technologies have been utilized by RECLAIM facilities to reduce emissions since the start of the RECLAIM program: changes to the manufacturing process or production method which result in a reduction of emissions; modifications to the emitting equipment resulting in emissions reduction; and installation of add-on air pollution control equipment which removes a pollutant from the exhaust gases.

Emission control technologies which have been used by RECLAIM facilities to reduce NO_x and SO_x emissions, excluding those which were implemented to satisfy Best Available Control Technology (BACT) requirements, include low NO_x burner, oxygenated fuel burner, oxygen enrichment, dry scrubber, and process

and efficiency enhancements. These emission control technologies are also in use facilities which are not in the RECLAIM universe. There is no evidence to suggest that RECLAIM facilities are subject to more stringent emission control requirements than other stationary sources.

CHAPTER 4

NEW SOURCE REVIEW ACTIVITY

Summary

RECLAIM is designed to comply with the requirements of both state and federal laws while providing flexibility to facilities in managing their operations. Review of New Source Review (NSR) activity in the 1996 compliance year shows that no new or existing facilities joined the RECLAIM program. However, a total of 50 RECLAIM facilities incurred NSR emission increases due to expansions or modifications. These data indicate that RECLAIM has not inhibited the construction and operation of new or modified sources at the RECLAIM facilities in the Basin.

RECLAIM is required to demonstrate compliance with federal NSR requirements by meeting a 1.2-to-1 offset ratio for NO_x and SO_x emission increases on a programmatic basis (aggregate basis rather than individual). RECLAIM far exceeded the required 1.2-to-1 offset ratio during the 1996 compliance year for both NO_x (49-to-1 achieved) and SO_x (64-to-1 achieved), demonstrating federal equivalency. In addition to complying with the offset ratio, RECLAIM requires BACT for all new or modified sources with emission increases and restricts trading RTCs from inland to coastal facilities in cases of emission increases above the facility's 1994 allocation plus non-tradable credits in order to ensure net ambient air quality improvement within sensitive zones. The evaluation of NSR activity during the 1996 compliance year shows that RECLAIM is in compliance with both state and federal NSR requirements.

Background

Both state and federal law require NSR programs to ensure that emission increases from the construction of new or modified stationary sources in non-attainment areas does not interfere with progress towards attainment of ambient air quality standards. RECLAIM is designed to comply with NSR requirements without preventing existing facilities from expanding their operations or new facilities from entering the program.

Title 42, U.S.C. §7511a(e) requires sources in extreme non-attainment areas such as the South Coast Air Basin to mitigate their emission increases by providing emissions offsets at a 1.2-to-1 ratio or higher. Rule 2005 - New Source Review for RECLAIM requires a 1-to-1 offset ratio for emission increases in order to provide maximum flexibility to RECLAIM sources as well as to simplify the RECLAIM Trading Credit (RTC) transaction system. However, RECLAIM complies with the federal offset requirement by demonstrating equivalency through meeting the 1.2-to-1 offset ratio on an aggregate basis. Because of the annual reduction to allocations given to RECLAIM facilities, the program generates sufficient excess emission reductions beyond Clean Air Act requirements such as RACT to mitigate the difference in the RECLAIM emission offset ratio and the higher offset ratio required under federal law. RACT, as it existed in 1993 when RECLAIM was adopted, was exceeded by the RECLAIM

allocations. Due to the stringency of RECLAIM reduction requirements, it is likely that RACT is still exceeded; certainly the three percent annual reasonable further progress requirement is exceeded by RECLAIM. State law also requires no net increase in emissions of non-attainment pollutants from new or modified sources. RECLAIM demonstrates compliance with this requirement on an aggregate basis as it does with the federal offset requirement.

New or modified sources are subject to the use of the Lowest Achievable Emission Rate (LAER) technologies under the federal NSR requirements and are required to implement the Best Available Control Technologies (BACT) by state law. Rule 2005 requires a BACT analysis for new or modified sources with emission increases of RECLAIM pollutants. This provision demonstrates compliance with both the state and federal requirements regarding control technologies.

In addition to offset and BACT requirements, RECLAIM subjects RTC trades, which are conducted to mitigate emission increases over the sum of the facility's starting allocation and non-tradable credits to trading zone restrictions to ensure net ambient air quality improvement within the sensitive zone as established in Health and Safety Code §40410.5.

NSR Activity

Evaluation of NSR data indicates that facilities operating under RECLAIM continue to successfully expand or modify their operations while complying with the NSR requirements. No new or existing facilities joined the program although 50 RECLAIM facilities experienced NSR emission increases due to expansions or modifications during the 1996 compliance year. These data indicate that RECLAIM has not inhibited the construction and operation of new or modified sources at the RECLAIM facilities in the Basin.

NSR Compliance Demonstration

RECLAIM is designed to demonstrate compliance with the federal NSR requirements by meeting the federally-required offset ratio of 1.2-to-1 on an aggregate basis. Compliance with the federally-required offset ratio also indicated compliance with the state requirement of no net emission increases from new or modified sources.

RECLAIM far exceeded the required offset ratios for both NO_x and SO_x during the first three compliance years. According to Table 4-1, which summarizes NSR emission increases and offset ratios, RECLAIM provided programmatic offset ratios of 49:1 for NO_x and 64:1 for SO_x in 1996. Based on these data, it is clear that RECLAIM continues to generate sufficient excess emission reductions to mitigate the difference between the 1-to-1 offset ratio in Rule 2005 and the higher offset ratio required by federal law. In fact, RECLAIM is designed to ensure compliance with the offset requirements through the annual reduction to allocations assigned to each RECLAIM facility.

**Table 4-1
Emission Reductions and Offset Ratios for 1996 Compliance Year**

	NOx	SOx
NSR Emission Increase (tons)	318	62
Offsets Available^{1,3} (tons)	15,278	3,879
Offset Ratio^{2,3}	49:1	64:1

1 Offset Avail = Total Supply of 1996 RTCs (Alloc. + Conv. ERCs) - Annual Emission Increase

2. Offset Ratio = 1 + (Offset Available/NSR Emission Increase) to 1

3. Because NSR analysis covers calendar years rather than compliance years, Cycle 2 allocations are prorated between the calendar years they overlap (fifty percent of the compliance year 1995 and fifty percent of the compliance year 1996 cycle 2 allocations were included in this analysis).

In addition to complying with the offset ratio requirements, RECLAIM requires Best Available Control Technology (BACT) and modeling for all new or modified sources with emission increases of RECLAIM pollutants. Furthermore, RTC trades conducted to mitigate emission increases over the sum of the facility's starting allocation and non-tradable credits are subject to trading zone restrictions to ensure net ambient air quality improvement within the sensitive zone as required by state law.

In conclusion, the evaluation of NSR activity in 1996 clearly shows that RECLAIM is in compliance with both state and federal NSR requirements. AQMD will continue to monitor NSR activity under RECLAIM in order to assure continued progress towards attainment of ambient air quality standards without hampering economic growth in the Basin.

CHAPTER 5 COMPLIANCE

Summary

Emissions monitoring is the tool to demonstrate allocation compliance under RECLAIM. Specific monitoring approaches were built into the RECLAIM structure to assure a high level of confidence in emissions quantification. In order to determine compliance status, AQMD staff conducted comprehensive annual audits of all emissions reports from every RECLAIM facility. The results of the audits for the past three years reveal that the overall RECLAIM emission goal was met each year.

For the 1996 compliance year, preliminary audit result showed that 49 facilities exceeded their annual allocations. The main cause for these exceedances was due to the application of Missing Data Procedures (MDP) in cases where the required continuous emissions monitoring systems (CEMS) were not certified or where emissions were not electronically reported within the specified deadlines. Despite the use of MDP, the emissions for the 1996 compliance year were well below the targeted emissions in both the 1994 and 1997 AQMP.

Background

The RECLAIM program is designed to replace the concentration-based emission limits on individual pieces of equipment specified in the command-and-control rules with an annual allocation of emissions for the facility as a whole. With the exception of meeting Best Available Control Technology (BACT) requirements, a RECLAIM facility has the flexibility to decide how emissions are distributed among its equipment in order to meet its annual allocation, and may also choose to purchase RTCs to increase its allocation. This flexibility is supported by standardized emission monitoring, reporting and recordkeeping (MRR) requirements to ensure the reported emissions are real, quantifiable, and enforceable. As a result, compliance is one of the most critical elements of the RECLAIM program. In order to meet clean air goals, AQMD must ensure that the annual emissions targets for the RECLAIM facilities are being met.

The first compliance year was an interim period during which the RECLAIM rules provided time for facilities to install and certify certain required emissions monitoring and reporting devices. The second compliance year marked the start of the requirements for more accurate emissions monitoring equipment for major sources and electronic reporting of emissions. These requirements were designed to provide more accurate and up-to-date emissions reports. Once facilities install and complete the certification of the required monitoring and reporting equipment, they are relieved from command-and-control rule limits and requirements. Many facilities encountered technical problems which resulted in delays in certifying their monitoring equipment. During the 1996 compliance year, most of the above-mentioned technical problems were resolved. However, focus was turned to the problems associated with computer programs used to

automate emissions reporting, which resulted in failures to submit electronic reports within the required time period.

Pursuant to the RECLAIM rules, failure to comply with the monitoring or reporting requirements in a timely manner results in emissions calculations based on Missing Data Procedures (MDP) which conservatively estimate the emissions from RECLAIM sources. Despite the use of MDP, preliminary results from the 1996 compliance year audit show that the overall RECLAIM emission goal was again met, as in the previous two years.

Allocation Compliance

Requirements

The RECLAIM program provides facilities with the flexibility to decide how to manage their emissions in order to meet their allocations in the most cost-effective manner. At the beginning of the program, each RECLAIM facility received an annual allocation for each year from 1994. Facilities may buy RTCs to increase their allocations, or sell unneeded RTCs.

At the end of each compliance year, each facility must hold sufficient RTCs in its allocation account to cover its emissions for the year. Facilities may buy or sell RTCs from each other at any time of the year in order to ensure that their emissions are covered. In addition, after the end of each compliance year, there is a 60-day reconciliation period during which facilities have a final opportunity to buy or sell RTCs for that year. At the end of this reconciliation period, each facility is required to certify the emissions for the preceding year by submitting its Annual Permit Emissions Program (APEP) Report.

Compliance Audit

AQMD has conducted audits on the data submitted by RECLAIM facilities to ensure the integrity and reliability of the data each year since the beginning of the program in 1994. For the past three years, AQMD staff has reviewed each APEP report submitted to assess the accuracy of reported emissions. This includes field inspections to check the equipment, monitoring devices, and operation records to verify the emissions data submitted in the APEP reports. These inspections revealed that some facilities have made errors in quantifying their emissions, such as arithmetic errors, use of inappropriate emission factors, or inappropriate use of missing data substitution. Therefore, some of the reported emissions in the APEP reports had to be adjusted after completion of the audits.

Whenever an audit revealed a facility to be in exceedance of its annual allocation, the facility was provided an opportunity to review the audit and to present additional data to further refine the audit results. Emissions data are ensured to be valid and reliable through this extensive and rigorous audit process.

Compliance Status

Preliminary audit results for the 1996 compliance year reveal that the overall RECLAIM emission goal was met. Although the preliminary results indicate that 49 facilities exceeded their annual allocations, this number is likely to change once the facilities have the opportunity to provide additional information. It is probable that the compliance rate for the 1996 compliance year will be in the 85 to 90 percent range.

A small number of facilities exceeded their allocations for various reasons in the 1996 compliance year. The main cause was the application of MDP in cases where the required continuous emissions monitoring systems (CEMS) were not certified or where emissions were not electronically reported within the specified deadlines.

Based on the results from annual RECLAIM compliance audits conducted by AQMD staff, the reasons for allocation exceedances are summarized as follows:

- **Failure to Follow Missing Data Procedures**
RECLAIM rules require facilities to report emissions according to MDP when valid data are not obtained from the monitoring equipment or when daily emission reports for major sources are not submitted on time. MDP generally yields a higher emissions number and several facilities failed to retain or buy sufficient RTCs.
- **Emission Calculation Errors**
Typical errors included using the wrong emission factor or making arithmetic errors in the calculations.
- **Failure to Trade**
Some facilities lacked sufficient RTCs to cover their reported emissions, yet did not buy RTCs. Some other facilities actually attempted to purchase RTCs. However, problems in the transactions were encountered. Some trades were not approved because of inaccurate information. Other trades were not deposited to the allocation account which is the only account allowed for emission reconciliation.
- **Failure to Reconcile the RTCs Balance**
For facilities that exceeded either their 1994 or 1995 Allocations, the amount of exceedance was deducted from the facility's RTC accounts for subsequent years. These facilities were notified of these debits. However, some failed to purchase additional RTCs to make up for the amounts reduced.

For some facilities, two or more of these factors contributed to the exceedances. None of the exceedances were due to lack of availability of RTCs on the market. As discussed in Chapter 2, RTC Allocations and Trading, the amount of NO_x and SO_x RTCs offered for sale was more than adequate to cover the demand by RECLAIM facilities.

Effects of Missing Data Procedures

MDP were designed to provide a method for determining emissions when the emissions monitoring systems fail to yield valid emissions measurements.

These occurrences may be caused by the unavailability or failure of the monitoring systems or the data acquisition and handling system (DAHS) which is required for major sources. In addition, major sources are required to use MDP for determining emissions whenever emissions reports were not submitted by the reporting deadlines. Different sets of MDP are defined for different source classifications.

During the 1996 compliance year, most of the issues associated with CEMS certifications were resolved. However, many facilities experienced problems with computer programs used to collect emissions data, and to generate and submit emission reports. These problems lead to either non available emissions data or late emissions reports, and eventually, resulted in emission reports based on MDP which generally overstate the actual emissions from major sources subject to CEMS requirements. As in the second year, MDP had a significant impact on the level of emissions reported from major sources even though the causes for using MDP changed. The portions of emissions attributed to MDP are described in detail in Chapter 3, Emission Reductions.

In addition to MDP for major sources, there are also MDP defined in the RECLAIM rules for smaller sources known as large sources and process units. These procedures are applicable when a process monitoring device fails or when the facility operators fail to record process rates or fuel usage. However, the resulting emissions reports are more representative of the actual emissions than in the cases for major sources. In these cases, average or maximum emissions from previous operating periods are allowed to be used.

Emissions Monitoring

Overview

The accuracy of reported RECLAIM facility emissions—and thereby the enforceability of the RECLAIM program—is assured through a three-tiered hierarchy of monitoring, record keeping and reporting (MRR) requirements. The MRR category into which equipment at a facility falls is based on what kind of equipment it is and on the level of emissions produced or potentially produced by the equipment. RECLAIM divides all NO_x sources into major sources, large sources, process units and equipment exempt pursuant to Rule 219 - Equipment Not Requiring a Written Permit Pursuant to Regulation II. All SO_x sources are divided into major sources, process units and equipment exempt pursuant to Rule 219. Table 5-1 shows the monitoring requirements applicable to each of these categories.

**Table 5-1
Monitoring Requirements for RECLAIM Sources**

Source Category	Major Sources (NOx and SOx)	Large Sources (NOx)	Process Units and Rule 219 Equipment (NOx and SOx)
Monitoring Method	Continuous Emission Monitoring System (CEMS)	Fuel Meter or Continuous Process Monitoring System (CPMS)	Fuel Meter and/or Timer

Continuous Emission Monitoring Systems (CEMS)

Requirements

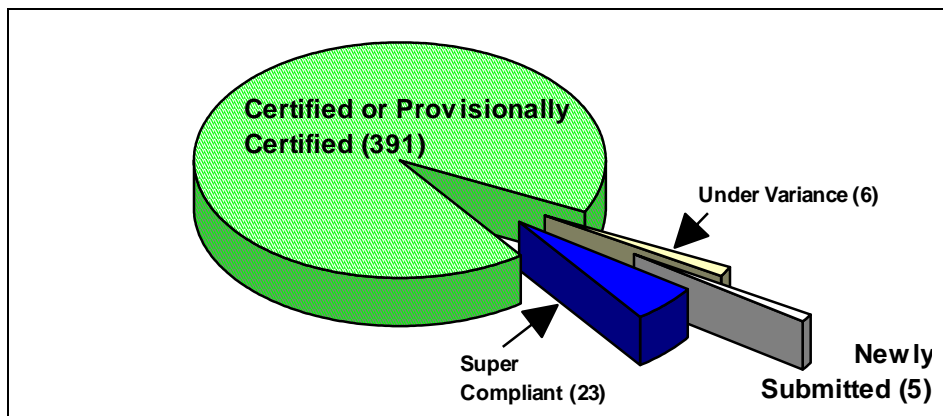
CEMS represent both the most accurate and the most reliable method for continuously monitoring all of the parameters necessary to directly determine mass emissions of NOx and SOx, as well as the most costly method. These attributes make CEMS the most appropriate method for the largest equipment in the RECLAIM universe, major sources, which are relatively few in number but represent a majority of the total emissions from all equipment.

Alternatives to CEMS, namely Alternative Continuous Emission Monitoring Systems or ACEMS, are allowed under the RECLAIM regulation. These are devices that do not directly monitor NOx or SOx mass emissions, but, rather, correlate them to multiple process parameters. The requirements for ACEMS are that they must be determined by the AQMD to be equivalent to CEMS in relative accuracy, reliability, reproducibility, and timeliness.

Compliance Status

By the end of 1997, almost all facilities that are required to have CEMS have certified or provisionally approved their CEMS. As of January 1, 1998 there were 90 facilities in the RECLAIM universe requiring a total of 415 CEMS. Figure 5-1 shows the various CEMS certification status.

**Figure 5-1
CEMS Certification**



Of those 11 CEMS (2.4%) that are not certified or do not have provisional approval, 5 (1.2 %) are new sources. The CEMS that remain uncertified or without provisional approval are typically confronted with technical problems of one kind or another to overcome.

Standing Working Group on RECLAIM CEMS Technical Issues (SWG)

Over the course of RECLAIM implementation, CEMS technical issues arose which delayed certification of many CEMS. To address these issues and further assist facilities in complying with major source monitoring requirements, a Standing Working Group (SWG) on RECLAIM CEMS Technical Issues was formed to provide a forum in which facility representatives, consultants and AQMD staff could discuss and work out technically sound and reasonable solutions. Although the SWG is open to any interested party, the issues it has addressed tend to be associated mainly with the difficult situations faced by refineries in implementing CEMS requirements. This is attributed to the variability of the fuel used in refinery equipment as compared to natural gas, the operational variability of much of the affected equipment, and the fact that many of the sources in an older refinery were never constructed with CEMS monitoring in mind. The SWG created three subcommittees to deal with issues related to:

- pre-certification testing and information requirements for CEMS;
- post-certification testing requirements for routine (foreseeable) repairs or replacements of portions of the CEMS, vendor pre-certification of analyzers, and data submittal formats for semiannual and annual assessment testing; and
- certification of total sulfur compound monitoring systems

The second annual audit reported the creation of the SWG and its three subcommittees. The list of technical issues before the SWG has grown and they are summarized in Tables 5-2 and 5-3. Over the past year several of these issues have been resolved, as indicated in the summary table. Five technical guidance documents (TGD) were issued, and several more are in the draft stage and under review. The technical issues revolving around the total sulfur analyzer systems are not included in the table. Due to the close interrelationship that the sulfur issues have with each other, they are considered a single issue, and dealt with separately.

Table 5-2 lists the issues that have been resolved, each resulting in issuance of a TGD.

**Table 5-2
Resolved CEMS Issues with TGD Issued**

Issue	Intent
Procedure for discarding RATA test runs that are outliers.	Provide testing flexibility.
QA/QC requirements for CEMS modification (replacement of "like" parts).	Provide CEMS flexibility, reduce cost.
QA/QC requirements for CEMS modification (replacement of "unlike"	Provide CEMS flexibility, reduce cost.

Issue	Intent
parts).	
CEMS testing requirements resulting from analyzer span range modification.	Provide CEMS flexibility.
Conduct 3 extended moisture (Method 4.1) runs instead of 9 shorter runs.	Increase accuracy, reduce cost.

Table 5-3 lists the CEMS proposals that are still under review by the SWG. Once these issues are resolved, roughly 30% of CEMS waiting final certification can be completed. AQMD has set a goal to resolve all outstanding SWG CEMS issues during calendar year 1998, and to complete the certification of CEMS as the technical (or regulatory, as the case may be) solutions are implemented.

**Table 5-3
CEMS Proposals Under Review**

Issue	Intent
Use historical data to determine stack moisture.	Increase accuracy, provide CEMS flexibility.
Use constant F-factor for refinery fuel gas.	Provide CEMS flexibility.
Alternative passing criteria for low NO _x sources.	Provide CEMS flexibility for cases where technical difficulty in meeting current limits inhibits implementation of more accurate monitoring.
Alternative passing criteria for low SO _x sources.	Provide CEMS flexibility for cases where technical difficulty in meeting current limits inhibits implementation of more accurate monitoring.
Alternative passing criteria for low stack flow sources.	Provide CEMS flexibility for cases where the precision/accuracy of current reference methods impacts the ability to meet current limits.
Alternative to periodic CEMS sample system bias test.	Improve CEMS data quality.
Alternative to CEMS 2-hour drift test.	Improve CEMS data quality.
Alternative to multi-load RATA for certification.	Improve CEMS data quality.
Use of and limits on fuel meter calibration correction factor (K-factor).	Provide CEMS flexibility for cases where biases introduced primarily by physical constraints on meter installation configuration impact ability to meet current limits.

Semiannual and Annual Assessments of CEMS

One measure of the quality of CEMS data is the semiannual and annual assessments of CEMS performance, known as the Relative Accuracy Test Audits (RATA). These audits compare the CEMS data to reference method data

taken simultaneously by a source testing contractor that is approved by AQMD through its Laboratory Approval Program as required by RECLAIM. The performance requirements for the RATAs are $\pm 20\%$ for pollutant concentration, $\pm 15\%$ for stack flow rate, and $\pm 20\%$ for pollutant mass emission rate (the product of concentration and stack flow rate). The RATAs also determine whether CEMS data must be adjusted for low readings compared to the reference method (bias adjustment factor), and by how much. The RATA presents two pieces of data, the CEMS bias (how much it differs from the reference method on the average) and the CEMS confidence coefficient (how variable that bias or average difference is).

Over the past two to three years, RECLAIM facilities have been conducting RATAs of certified CEMS—using private sector testing laboratories approved under the AQMD Laboratory Approval Program—at their prescribed intervals, either semiannually or annually depending on the relative accuracy value which is the sum of the average differences and the confidence coefficient. If all relative accuracies are 7.5% or less, then the interval is annual.

Table 5-4 summarizes passing rates for RATAs of certified CEMS, for NO_x and SO_x concentration, total sulfur in fuel gas concentrations, stack flow rate (in-stack monitors and F-factor based calculation), and NO_x and SO_x mass emissions through the 1996 calendar year.

**Table 5-4
Passing Rates Based on Relative Accuracy Test Audits of Certified CEMS in 1996**

Concentration						Stack Flow Rate				Mass Emissions			
NO _x		SO ₂		Total Sulfur		In-Stack Monitor		F-Factor Based Calc.		NO _x		SO _x ¹	
No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass
265	99	26	100	37	73	29	100	259	97	262	98	58	83

¹ Does not include SO_x emissions calculated from total sulfur analyzers; the number of mass emission RATA's is significantly greater than SO₂ concentration RATA's because multiple emission sources may be associated with a single SO₂ analyzer

Table 5-5 summarizes the 1997 calendar year passing rates for RATAs of certified CEMS, for NO_x and SO_x concentration, total sulfur in fuel gas concentrations, stack flow rate (in-stack monitors and F-factor based calculation), and NO_x and SO_x mass emissions.

**Table 5-5
Passing Rates Based on Relative Accuracy Test Audits of Certified CEMS in 1997**

Concentration						Stack Flow Rate				Mass Emissions			
NO _x		SO ₂		Total Sulfur		In-Stack Monitor		F-Factor Based Calc.		NO _x		SO _x ¹	
No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass	No.	% Pass
252	99	36	100	14	71	300	99	0	N/A	250	99	34	100

¹ Does not include SO_x emissions calculated from total sulfur analyzers; the number of mass emission RATA's is significantly greater than SO₂ concentration RATA's because multiple emission sources may be associated with a single SO₂ analyzer

As indicated in Tables 5-4 and 5-5, the passing rates for NO_x/SO₂ concentration, stack flow rate, and mass emissions were relatively high, while the passing rate

for total sulfur concentration was lower. There are only four facilities which utilize total sulfur analyzers. In 1996 the passing rate for concentration RATA's performed on total sulfur analyzers was 73%. The reasons for this low passing rate was investigated by the Standing Working Group's Sulfur Subcommittee, and, as reported in 1996, thought to be primarily due to the unreliability (and resultant variability) of calibration standards. Working with the gas standards vendors, the affected facilities and analytical laboratories capable of performing reference method analysis (AQMD Method 307-91), protocols for gas standard analysis to assure that all sulfur species are accounted for and accurately quantified were agreed upon. For the year 1997, the passing rate actually fell to 71%. However, in reviewing the information, the following observations stand out:

- All of the failed RATA's occurred at one of the four affected facilities in 1997; in the prior period, the failed RATA's occurred at all four facilities
- many more total sulfur analyzer RATA's were conducted during the prior period than during 1997 because there were many more failed RATA's
- the facility where failed RATA's occurred in 1997 has five of the nine total sulfur analyzers operating under RECLAIM

Despite the fact that the percentage of passing RATA's for total sulfur analyzers remains essentially unchanged, there has been a reduced need for most affected facilities to conduct repeat RATA's, which reduces the on-going costs of the program. The difficulties still being encountered by one facility indicate a need for continued work, but, perhaps, with the focus moved to monitoring technology and field operation.

There have been significant improvements with respect to the availability of reliable calibration gas, the reliability of the reference method, and an understanding of the factors that influence the ability to obtain valid total sulfur analyzer data. For this technical issue, the Standing Working Group process worked well in evaluating the problems and recommending the appropriate solutions to address them.

Emissions Reporting

Requirements

RECLAIM is designed to take advantage of electronic reporting technology in order to streamline reporting requirements for both the facilities and the AQMD and to track compliance. Under RECLAIM, facilities report their emissions electronically on a per device basis to the AQMD's Central Station computer as follows:

- Major sources must use a Remote Terminal Unit (RTU) to telecommunicate rule compliance data to the AQMD Central Station. The RTU collects data, performs calculations, generates the appropriate data files, and transmits the data to the Central Station.
- Rule compliance data for large sources and process units may be transmitted via RTU. Alternatively, RECLAIM facilities may compile the

data manually for large sources and process units and transmit it to the Central Station via modem. The data may be transmitted directly from the facility or through a third party.

Electronic reporting was a new approach for most facilities. Some facilities encountered delays in electronic reporting for various reasons. Despite these delays, electronic reporting devices have been installed and are transmitting data for the majority of sources at RECLAIM facilities. Given the novelty of the electronic reporting requirements for most facilities, some delays are to be expected. AQMD staff has been working diligently with industry to assist RECLAIM facilities in meeting the electronic reporting requirements.

Compliance Status

As in certifying the CEMS, technical problems were encountered by RECLAIM facilities trying to comply with the electronic emissions reports requirements. Integration of the monitoring equipment and the RTU proved to be a major challenge to RECLAIM facilities in that doing so requires a combination of expertise with both types of equipment. Electronic reporting was less complicated for facilities without Major Sources.

Problems associated with electronic reporting can be divided into the following categories:

- **Integration Problems:** Most every RECLAIM facility employed independent contractors to develop and install RECLAIM monitoring and reporting equipment. There were contractors that were not fully equipped with the knowledge to integrate both the monitoring and reporting equipment. This resulted in various reporting failures including inaccurate reporting, late reporting, and non-reporting.
- **Unqualified Contractors:** Some of the contractors employed by RECLAIM facilities proved to be incapable to fulfill the contracts to set up a fully integrated system. Some contractors eventually went out of business. Their systems were non-functional. As with much computer software, these systems are extremely difficult to repair. Most of these systems had to be replaced with completely new systems.
- **Misunderstanding of MDP:** The integrated CEMS are required to perform calculations pursuant to MDP whenever valid data is not obtained. In the development of the software, the provisions of MDP were not correctly interpreted and applied in some cases. In response, a working group of industry, independent contractors and District staff was formed to discuss and refine the MDP. As a result, rule amendments were adopted by the Governing Board in February of 1997.
- **Failure to Follow File Transfer Protocols:** To ensure proper transfer of data, a protocol was specified within the RECLAIM rules to closely follow standard electronic file transfer protocols. Failure to adhere to such protocols resulted in the non-receipt of data.
- **Misunderstanding of Requirements:** The requirements for electronic reporting of emissions from process units were contained in the Protocols to the RECLAIM Rules which was not readily apparent to RECLAIM

facilities with Process Units. The RECLAIM rules were amended in July 1996 to clarify this requirement.

During the first two years of the program, both RECLAIM facilities and the AQMD concentrated their resources to resolve CEMS installation and certification issues. Upon the resolution of most of these issues, the focus turned to data collection and transmission issues. A working group was assembled in the later part of 1995 to discuss and resolve these issues which were mainly related to the operation of the computers used to control data collection and manipulation. Resolutions from this working group resulted in issuance of guidance documents and rule amendments. The last set of amendments were adopted by the Governing Board on February 14, 1997. This set of amendments clarified rule requirements, added new data reporting functions, and reduced the required amount of data to be retained. The changes were significant enough that most CEMS need to be upgraded to comply with the requirements. As a result, an implementation period of 10 months were built in to allow time for the upgrading and testing of the new algorithms. The effective date of this amendment was set as January 1, 1998.

Staff is continuing its outreach efforts to clarify issues related to electronic reporting. The Working Group is comprised of major software developers in addition to the RECLAIM facility operators. In July 1997, a public workshop was held to explain the rule amendments and the new reporting requirements. CEMS vendors and software developers were invited to showcase their products and services during this workshop. However, the amendments are significant enough that computer glitches are expected to occur in the initial stages of implementation.

Protocol Review

As required in Rule 2015(b)(1), staff has reviewed “the effectiveness of enforcement and protocols [for the purpose of recommending any appropriate] revisions to the protocols to achieve improved measurement and enforcement of RECLAIM emission reductions while minimizing administrative cost to the District and RECLAIM participants,” and has the following recommendations:

- Staff believes that its compliance program has been comprehensive and highly effective. Emission audits of each RECLAIM facility have been conducted annually. Staff also conducted a number of forums and workshops and maintained regular industry groups and working groups meetings. These meetings focused discussions on specific implementation issues. Results of these discussions have been transformed into either implementation guidance documents or rule amendments to clarify rule intent and to provide alternative compliance approaches. Staff recommends that the AQMD continue to conduct annual RECLAIM compliance audits and continue its outreach effort to assist sources in achieving and maintaining compliance.
- Staff has worked closely with RECLAIM participants to resolve issues and concerns regarding the NO_x and SO_x MRR protocols in a timely manner. Since the program was adopted, staff has produced several rule interpretation and implementation guidance documents to clarify and resolve specific concerns about the protocols raised by RECLAIM

participants. In situations where staff could not make interpretations to existing rule requirements to adequately address the issues at hand, the protocols or rules have been amended. The RECLAIM rules and protocols have been amended numerous times since program adoption. Staff also works with RECLAIM participants through the Standing Working Group on RECLAIM CEMS and the Working Group on Missing Data to resolve CEMS-related issues. Resolutions from these working groups have been carried through either rule implementation guidance documents or rule amendments. Rule amendments reflecting the resolutions from discussions with industry and the Missing Data Working Group were adopted by the Governing Board July 12, 1996, February 14, 1997, and April 11, 1997. Refer to Appendix D for a summary of the RECLAIM amendments adopted during the 1996 compliance year (January 1, 1996 through June 30, 1997). AQMD will continue to work closely with RECLAIM participants to resolve concerns in the most timely and appropriate manner.

CHAPTER 6 JOB IMPACTS

Summary

During the 1996 compliance year, one RECLAIM facility attributed one job gain to RECLAIM for a new employee to handle RECLAIM compliance issues. One RECLAIM facility attributed two job losses to RECLAIM as a result of profit reduction due to RECLAIM compliance costs. Furthermore, six RECLAIM facilities shut down or went out of business in 1996. None of these shutdown facilities cited RECLAIM as a contributing factor in their decision to cease operation.

Background

RECLAIM's impact on jobs in the regional economy was assessed by examining job data submitted by RECLAIM facilities as part of their Annual Permit Emissions Program (APEP) reports for compliance year 1996.

The APEP reports include the number of manufacturing and non-manufacturing jobs at each facility at the beginning of the compliance year. In addition to the numbers of jobs at the beginning of the compliance year, the APEP reports also ask for the number of job increases and decreases (as opposed to the net change) which occurred during the compliance year, the extent to which any increase or decrease in the number of jobs is attributable to the RECLAIM program, and a brief explanation of the job increases or decreases attributed to RECLAIM. AQMD staff also contacted the facility operators of facilities whose reported RECLAIM job gains and/or losses conflicted with the facility's reported total job gains and/or losses. These contacts provided more detailed information regarding their facilities' particular circumstances. A more detailed exposition can be found in Appendix E.

Job Impacts

The information gathered from 1996 APEP forms regarding overall employment and RECLAIM job impacts are tabulated and summarized in Tables 6-1 and 6-2. As indicated in Table 6-1, a total of 163 facilities reported 11,659 overall job gains while a total of 184 facilities reported 19,902 overall job losses. This resulted in 8,243 net job losses for RECLAIM facilities in the basin during the 1996 compliance year.

As indicated in the Table 6-2, one RECLAIM facility attributed one job gain to RECLAIM. This facility hired a new employee to handle RECLAIM compliance issues. In addition, one RECLAIM facility attributed two job losses to RECLAIM. This facility claimed that they had to lay-off two employees because the cost of RECLAIM compliance reduced their profit margin. These RECLAIM-related job gains and losses are negligible when compared to the overall employment data included in Table 6-1.

Table 6-1
Job Impacts at RECLAIM Facilities During the 1996 Compliance Year

Description	No. of Job
Initial Jobs	154,631
Overall Job Gain	11,659
Overall Job Loss	19,902
Final Jobs	146,388
Net Job Change	-8,243
Percent Job Change	-5.3
Facilities Reporting Job Gains	163
Facilities Reporting Job Losses	184

Table 6-2
Job Gains/Losses Attributable to RECLAIM During the 1996 Compliance Year

Description	No. of Job
Job Loss Attributed to RECLAIM	2
Facilities with Job Loss Attributed to RECLAIM	1
Job Gain Attributed to RECLAIM	1
Facilities with Job Gain Attributed to RECLAIM	1

The detailed information for facilities which reported job gains and losses in APEP forms for compliance year 1996 are summarized in Appendix E.

CHAPTER 7 AIR QUALITY AND PUBLIC HEALTH IMPACTS

Summary

Rule 2015(b)(1) requires AQMD to evaluate the issues related to emission trends, seasonal fluctuations, geographic distribution of emissions, per capita exposures and toxics impacts as a part of RECLAIM annual audits, in an effort to assess RECLAIM's impacts on air quality and public health.

There is an overall downward trend in emissions from RECLAIM facilities over the period from 1989 through 1996. It is expected that RECLAIM facilities will further decrease their emissions to comply with declining allocations. Analysis of quarterly emissions in the 1996 calendar year reveals that there is no significant seasonal shift in emissions, dispelling concerns about facilities shifting emissions from the winter season into the summer ozone season, thus exacerbating air quality. Furthermore, AQMD staff analyzed quarterly emission maps, which were prepared pursuant to Rule 2015(b)(2), for any discernible changes in the geographic distribution of emissions. The analysis of the emission maps does not show any distinct shift in the geographic distribution of emissions.

Analysis of per capita exposure in 1996 shows that the Basin has already achieved the 50% reduction target required by the California Clean Air Act (CCAA) for ozone; per capita exposure in 1996 was 20.3 hours, far below the 50% reduction target of 40.2 hours. AQMD staff also evaluated the toxics impacts of implementation of RECLAIM pursuant to Rule 2015. RECLAIM facilities are subject to the same air toxic regulations as other sources in the Basin. Therefore, there is no additional toxics impact due to the implementation of the RECLAIM program.

Background

RECLAIM is designed to comply with all applicable requirements of both the state and federal laws pertaining to air quality and public health and to help bring the South Coast Air Basin (Basin) into compliance with state and federal air quality standards. The program is also designed to achieve the same or a higher level of benefits in terms of air quality and public health as would have been achieved from implementation of the command-and-control rules and control measures which RECLAIM subsumed.

Rule 2015 (b)(1) requires that the following issues related to air quality and public health impacts are addressed as part of the annual program audit:

- Emission trends for RECLAIM facilities;
- Seasonal fluctuations in emissions;
- Geographic patterns of emissions;
- Per capita exposure to air pollution; and
- Toxics impacts.

Emission Trends for RECLAIM Sources

During program development, concerns were expressed that RECLAIM might cause sources to increase their emissions during the early years of the program due to perceived over-allocations of emissions. However, the analysis of emissions from RECLAIM sources indicates that this did not occur.

Figures 7-1 and 7-2 show NO_x and SO_x emissions from RECLAIM sources for the years 1989 through 1996. Although there is an overall downward trend in emissions from RECLAIM facilities over this time period, it is too early to discern any conclusive trend when analyzing only the emissions for the first three years of the program. However, the figures clearly show that RECLAIM facilities did not increase their emissions during the first three compliance years, dispelling the concerns about higher emissions in the early years.

Figure 7-1
NO_x Emission Trend for RECLAIM Sources

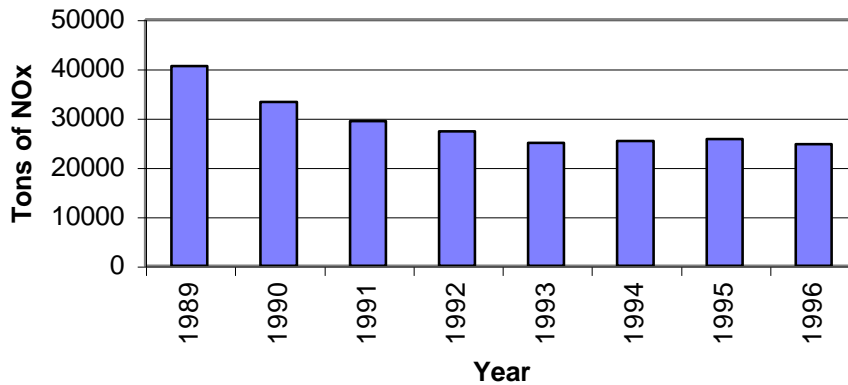
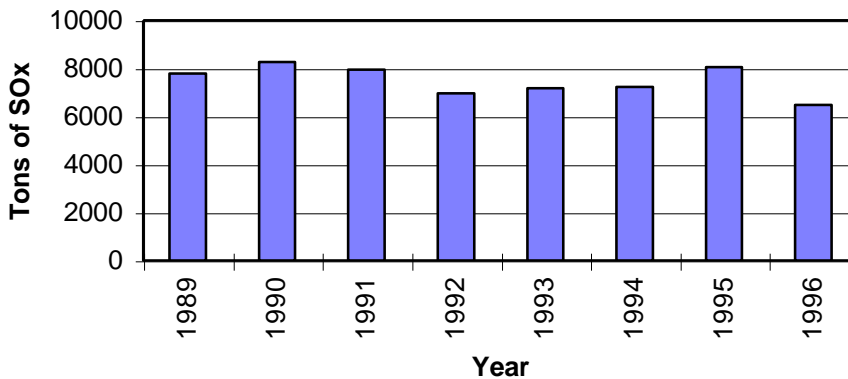


Figure 7-2
SO_x Emission Trend for RECLAIM Sources

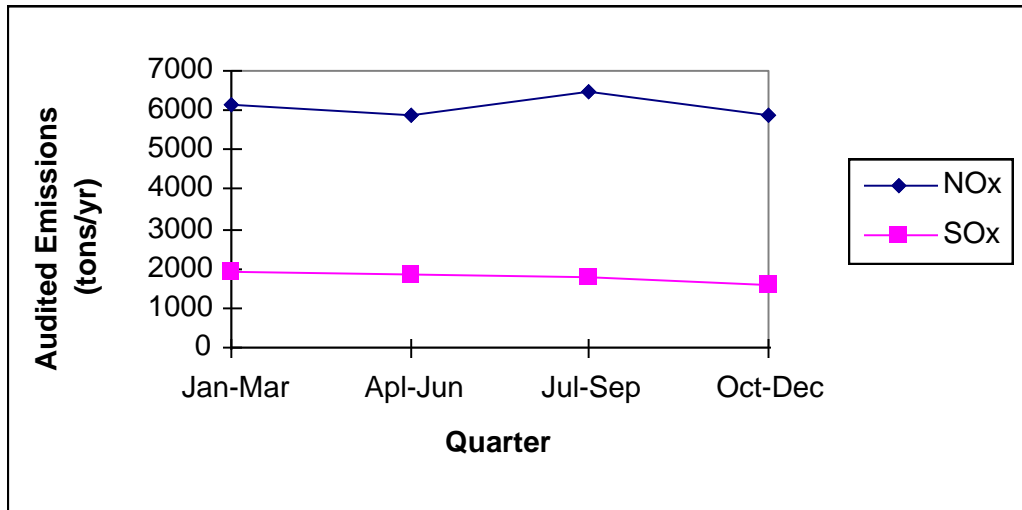


Seasonal Fluctuation in Emissions for RECLAIM Sources

Another concern that was raised during the development of the program was that RECLAIM might cause facilities to shift emissions from the winter season into the summer ozone season, thus exacerbating air quality. In order to address this concern, AQMD staff analyzed quarterly 1996 emissions to assess if there has been such a shift in emissions. The audited quarterly emissions data was used for this analysis.

As illustrated in Figure 7-3, there was little seasonal variation in 1996 NO_x or SO_x emissions. The comparison of quarterly emissions indicates that RECLAIM facilities did not shift emissions from the winter season into the summer season, dispelling the concerns about seasonal shifting of emissions.

Figure 7-3
1996 NO_x and SO_x Quarterly Emissions



Geographic Distribution of Emissions

RECLAIM facilities have the flexibility to increase emissions as much as they need to so long as they can provide RTCs to offset the emissions exceeding their allocations. Because of this flexibility RECLAIM facilities have, and their ability to purchase RTCs from other facilities, some people were concerned that RECLAIM could alter the geographic distribution of emissions in the Basin and adversely affect air quality in certain areas.

As part of the annual program audit, AQMD staff examined the quarterly emission maps, which were developed pursuant to Rule 2015(b)(2), for any notable changes in the geographic distribution of emissions. Quarterly emissions for both NO_x and SO_x are mapped for 1996 and 1997 and are included in Appendix F. These maps were generated using Quarterly Certificate of Emissions (QCER) data submitted by RECLAIM facilities.

The quarterly emission maps for 1996 and 1997 do not show any distinct shift in the geographic pattern of emissions. However, the AQMD will continue to

produce quarterly maps and assess the geographic patterns of emissions as additional quarterly emissions data become available.

Per Capita Exposure to Pollution

During program development, AQMD conducted an extensive analysis of RECLAIM's predicted effects on air quality and public health through modeling and compared the results to projected impacts from the continuation of the traditional command-and-control regulations and implementation of control measures in the 1991 AQMP. One of the criteria examined in the analysis was per capita population exposure. Per capita population exposure reflects the length of time each person is exposed to unhealthy air quality.

The California Clean Air Act (CCAA) establishes specific milestones for achieving reductions in overall population exposure to severe nonattainment pollutants in the Basin. These milestones are 25 percent reduction by December 31, 1994, 40 percent reduction by December 31, 1997, and 50 percent reduction by December 31, 2000, relative to a 1986-88 baseline.

Table 7-1 compares the actual per capita exposures in 1996 to the exposure milestones as specified in the CCAA. Analysis of the per capita exposures in 1996 indicates that the four counties, and Basin overall, have made substantial progress toward continuous attainment of the state standard, already achieving the 50% reduction target scheduled for 2000.

Table 7-1
Per Capita Exposure above the State Standard of 0.09 ppm

Location	86-88 baseline ¹	1996 actual	1997 target ²	2000 target ³
Basin	80.5	20.3	48.3	40.2
Los Angeles	75.8	13.2	45.5	39.9
Orange	27.2	4.0	16.3	13.6
Riverside	94.1	42.8	56.5	47.0
San Bernardino	192.6	70.0	115.6	96.3

1. Average over three years, 1986 through 1988
2. 60% of the 1986-88 baseline exposures
3. 50% of the 1986-88 baseline exposures

Toxics Impacts

A comprehensive toxic impact analysis performed during program development concluded that RECLAIM would not result in any significant impacts on air toxic emissions. Nevertheless, in order to ensure that the implementation of RECLAIM does not result in adverse toxics impacts, the program audit is required to assess toxic risk reductions associated with RECLAIM.

RECLAIM sources continued to be subject to the same air toxic regulations as other sources in the Basin during the 1996 compliance year. Air toxics programs applicable to sources in the AQMD include:

- The federal National Emission Standards for Hazardous Air Pollutants (NESHAP) program, under which the EPA promulgates standards for specific source categories of air toxics;
- The state AB 2588 Air Toxics “Hot Spots” Program, which requires certain facilities to report their toxic emissions, notify exposed persons about significant health risks, and implement risk reduction plans;
- The state AB 1807 Toxic Air Contaminant Identification and Control Program, under which the state identifies toxic air contaminants and promulgates air toxic control measures for specific source categories;
- Rule 1401 - New Source Review of Carcinogenic Air Contaminants, which limits increases in carcinogenic air contaminants from new, modified and relocated sources;
- Rule 1402 - Control of Toxic Air Contaminants from Existing Sources, which requires certain facilities generating significant health risks to implement risk reduction plans, adopted pursuant to AB 2588 as amended by SB 1731; and
- Rule 1407 - Control of Emissions of Arsenic, Cadmium and Nickel from Non-Ferrous Metal Melting Operations, adopted pursuant to the AB 1807 program; and

These regulations ensure that RECLAIM does not result in adverse air toxic health impacts. Rule 1402 in particular will ensure that any RECLAIM facilities which are found to pose a significant health risk will be required to reduce the risk. In addition, air toxic health risk is primarily caused by emissions of volatile organic compounds (VOC), rather than NOx or SOx emissions. As a result, implementation of NOx and SOx RECLAIM will not significantly impact air toxic emissions. However, the AQMD will continue to monitor and assess toxic risk reduction as part of future annual audits.

CHAPTER 8

CONCLUSIONS AND RECOMMENDATIONS

This review of implementation of the RECLAIM program during the 1996 compliance year reveals that the program has resulted in emission reductions below the level targeted in the 1994 AQMP for the command-and-control rules and control measures it subsumed. Therefore, implementation of RECLAIM is not likely to result in a delay of compliance with the federal Clean Air Act or the California Clean Air Act. Furthermore, these emission reductions were achieved at less cost than anticipated under the command-and-control regulatory approach, as illustrated by the high volume of low-price RTC transactions recorded.

The monitoring elements of RECLAIM are being implemented successfully, although there were some delays in certifying CEMS. Appropriate rule amendments were implemented to equitably address these difficulties. RECLAIM's enforcement has been successful at maintaining a high level of compliance. RECLAIM has not resulted in a greater loss of jobs or shift from higher-skilled to lower-skilled jobs than would have occurred had RECLAIM not been adopted. Thus, overall, the annual audit results indicate that the implementation of RECLAIM during the 1996 compliance year was highly successful at achieving program goals.

Although RECLAIM has met all of the design criteria, AQMD is continuously striving to augment the program. Therefore, staff recommends implementation of the following program enhancements:

- Investigate the feasibility of replacing AQMD's RECLAIM electronic bulletin board with an internet web site and the possibility of providing an electronic RTC trading functionality; and
- Investigate the possibility of additional monitoring requirement options to minimize implementation costs as well as ensure the enforceability of the program.

APPENDIX A

RECLAIM UNIVERSE OF SOURCES

The RECLAIM universe of sources as of June 30, 1997 is provided below.

Facility ID	Cycle	Facility Name	Market
16395	2	AAA GLASS CORP	NOx
73635	1	ABLESTIK LABORATORIES	NOx
23752	2	AEROCRAFT HEAT TREATING CO INC	NOx
42676	2	AES PLACERITA INC	NOx
5998	1	ALL AMERICAN ASPHALT	NOx
3704	2	ALL AMERICAN ASPHALT, UNIT NO.01	NOx
800003	2	ALLIED SIGNAL INC	NOx
21290	1	ALPHA BETA COMPANY, FOOD 4 LESS	NOx
17840	2	ALPHA THERAPEUTIC CORP	NOx
21837	2	ALPHA/OWENS-CORNING LLC	NOx
12247	1	ALUMAX MILL PRODUCTS INC	NOx
17418	1	ALUMINUM COMPANY OF AMERICA	NOx
52517	1	AMERICAN NATIONAL CAN COMPANY	NOx
45527	2	AMERICAN RACING EQUIPMENT INC	NOx
61970	2	ANAHEIM MILLS CORP	NOx
21598	2	ANGELICA HEALTHCARE SERVICES GROUP INC	NOx
10141	2	ANGELICA HEALTHCARE SERVICES GROUP INC	NOx
74424	2	ANGELICA HEALTHCARE SERVICES GROUP INC	NOx
16642	1	ANHEUSER-BUSCH INC.(LA BREWERY)	NOx/SOx
800012	2	ARCO	NOx/SOx
47232	1	ARCO CQC KILN	NOx/SOx
65974	1	ARCO WESTERN	NOx
12155	1	ARMSTRONG WORLD INDUSTRIES, INC.	NOx
16737	2	ATKINSON BRICK CO	NOx
10094	2	ATLAS CARPET MILLS INC	NOx
800326	1	AVERY DENNISON, FASSON BASE MATERIALS	NOx
17400	1	AVERY FASSON-MPD	NOx
800205	2	BA PROPERTIES	NOx
800016	2	BAKER COMMODITIES INC	NOx
108701	1	BALL FOSTER GLASS PACKAGING CORP.	NOx
106797	1	BALL-FOSTER GLASS CONTAINER	NOx/SOx
Facility ID	Cycle	Facility Name	Market

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59968	1	BARMET ALUMINUM CORP.	NOx
40034	1	BENTLEY MILLS INC.	NOx
14472	2	BHP COATED STEEL (SUPRACOTE INC)	NOx
502	1	BLUE DIAMOND MATERIALS, CORONA PLANT	NOx
14445	2	BLUE DIAMOND MATERIALS, FONTANA PLANT	NOx
19390	1	BLUE DIAMOND MATERIALS, SUN VALLEY PLANT	NOx
102299	2	BMCA INSULATION PRODUCTS	NOx
10340	1	BREA CANON OIL COMPANY, BREA	NOx
800329	1	BREA CANON OIL COMPANY, CARSON	NOx
92019	2	BREA CANON OIL COMPANY-ALBERT LEVINSON	NOx
6714	2	BREA CITY	NOx
98159	2	BREITBURN ENERGY	NOx
25638	2	BURBANK, CITY OF	NOx
2443	2	CAL INDUSTRIAL PROCESSING CO	NOx
8791	2	CAL-PACIFIC DYEING & FINISHING CORP	NOx
22607	2	CALIFORNIA MILK PRODUCERS	NOx
800181	2	CALIFORNIA PORTLAND CEMENT CO	NOx/SOx
800344	1	CALIFORNIA STATE, AIR NATL.GUARD	NOx
46268	1	CALIFORNIA STEEL INDUSTRIES, INC.	NOx
107657	2	CALMAT CO.	NOx
107656	2	CALMAT CO.	NOx
107655	2	CALMAT CO.	NOx
107654	2	CALMAT CO.	NOx
107653	2	CALMAT CO.	NOx
104013	2	CALRESOURCES LLC, BREA	NOx
104017	1	CALRESOURCES LLC, HB	NOx
104015	2	CALRESOURCES LLC, YORBA LINDA	NOx
104012	1	CALRESOURCES OCS	NOx
67945	2	CANADA MALTING CO LTD,GREAT WESTERN MALT	NOx/SOx
9141	1	CANNERS STEAM COMPANY, INC.	NOx/SOx
22911	2	CARLTON FORGE WORKS	NOx
94079	1	CARSON COGENERATION CO.,CALIF LMTD PARTN	NOx
25016	2	CASTAIC CLAY MFG CO., INC	NOx
11034	2	CENTRAL PLANTS INC., CENTURY CITY	NOx
16575	1	CENTRAL PLANTS INC., DISNEYLAND	NOx
11197	2	CENTRAL PLANTS INC., HUNTINGTON BEACH	NOx
9053	1	CENTRAL PLANTS INC., LA	NOx
Facility ID	Cycle	Facility Name	Market
9217	1	CENTRAL PLANTS, INC., COLLEGE PARK	NOx

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40764	1	CENTURY LAMINATORS, INC.	NOx
75479	1	CES ENERGY ALBERHILL LTD	NOx
57818	1	CES ENERGY CORONA, LTD.	NOx
800273	2	CHEMOIL REF CORP	NOx
4451	1	CHERRY TEXTRON	NOx
800030	2	CHEVRON U.S.A. INC	NOx/SOx
800337	2	CHEVRON U.S.A., INC., LA HABRA	NOx
95212	1	CHROMA SYSTEMS PARTNERS	NOx
12224	2	CITY DYEING & FINISHING CO.	NOx
16978	2	CLOUGHERTY PACKING CO, FARMER JOHN MEATS	NOx
55349	2	COLOR AMERICA TEXTILE PROCESSING INC	NOx
53080	1	COLORTEX DYEING & FINISHING, INC.	NOx
69677	2	COLUMBIA PACIFIC ALUMINUM CORPORATION	NOx
11790	2	CONSOLIDATED FILM INDUSTRIES	NOx
68042	2	CORONA ENERGY PARTNERS, LTD	NOx
109879	1	CPC BAKING BUSINESS	NOx
13179	1	CRESCENT CRANES INC.	NOx
65384	1	CRITERION CATALYST COMPANY L.P.	NOx
18648	1	CROWN CITY PLATING COMPANY	NOx
3950	1	CROWN CORK & SEAL COMPANY, INC.	NOx
15982	2	CUSTOM ALLOY SALES INC	NOx
63180	1	DARLING-DELAWARE COMPANY, INC.	NOx
3721	2	DART CONTAINER CORP OF CALIFORNIA	NOx
7411	2	DAVIS WIRE CORP	NOx
47771	1	DELEO CLAY TILE COMPANY	NOx
800037	2	DEMENNO/KERDOON	NOx
5268	2	DIESEL RECON CO	NOx
800189	1	DISNEYLAND RESORT	NOx
99588	2	DOMTAR GYPSUM	NOx/SOx
103618	1	DOSKOCIL SPECIALTY BRANDS FOOD	NOx
800038	2	DOUGLAS AIRCRAFT CO	NOx
800039	2	DOUGLAS AIRCRAFT CO, TORR FAC	NOx
800264	2	EDGINGTON OIL COMPANY	NOx/SOx
10873	1	ELSINORE READY-MIX COMPANY, INC.	NOx
109208	2	EXEL TEXTILE	NOx
22047	1	FANSTEEL/CALIFORNIA DROP FORGE	NOx
61210	1	FILTROL CORPORATION	NOx
800047	2	FLETCHER OIL & REF CO	NOx/SOx
11716	1	FONTANA PAPER MILLS INC.	NOx
75373	2	FPB COGEN INC	NOx
2418	2	FRUIT GROWERS SUPPLY CO	NOx
Facility ID	Cycle	Facility Name	Market
10055	2	G-P GYPSUM CORP	NOx
5814	1	GAINEY CERAMICS INC.	NOx

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79015	2	GEO PETROLEUM INC	NOx
11016	2	GEORGIA-PACIFIC CORP	NOx
44551	1	GNB INCORPORATED	NOx/SOx
800184	2	GOLDEN WEST REFINING CO	NOx/SOx
101039	2	GRANITE CONSTRUCTION	NOx
8694	1	GRANNY GOOSE FOODS INC,BELL BRAND FI DIV	NOx
40196	2	GUARDIAN INDUSTRIES INC	NOx/SOx
106325	2	HARBOR COGENERATION CO	NOx
800295	1	HENKEL CORP., EMERY GROUP	NOx
107659	1	HEXCELL CORPORATION	NOx
15164	1	HIGGINS BRICK COMPANY	NOx
800066	1	HITCO	NOx
2912	2	HOLLIDAY ROCK CO INC	NOx
800069	2	HUGHES AIRCRAFT CO	NOx
800343	2	HUGHES AIRCRAFT CO, EDSG	NOx
800067	1	HUGHES SPACE & COMM.CO.-HUGHES AIRCRAFT	NOx
800232	2	HUNT-WESSON	NOx/SOx
800070	1	HUNTWAY REFINING COMPANY	NOx
100291	2	IMCO RECYCLING OF CALIFORNIA	NOx
800240	2	INLAND CONTAINER CORP	NOx
5830	1	INTERMETRO INDUSTRIES CORP.	NOx
106810	2	INTERSTATE BRANDS	NOx
23589	2	INTL EXTRUSION CORP	NOx
22373	1	JEFFERSON SMURFIT	NOx
16338	2	KAISER ALUMINUM & CHEMICAL CORP	NOx
18865	2	KAL KAN FOODS INC	NOx
11142	2	KEYSOR-CENTURY CORP	NOx
21887	2	KIMBERLY-CLARK CORP	NOx/SOx
1744	2	KIRKHILL RUBBER CO	NOx
57329	2	KWIKSET CORP	NOx
800335	2	LA CITY, DEPT OF AIRPORTS	NOx
800170	1	LA CITY, DWP HARBOR GENERATING STATION	NOx
800074	1	LA CITY, DWP HAYNES GENERATING STATION	NOx
800075	1	LA CITY, DWP SCATTERGOOD GENERATING STN.	NOx
800193	2	LA CITY, DWP; VALLEY STM PLANT	NOx
61962	1	LA CITY, HARBOR DEPT.	NOx
51949	1	LA DYE & PRINT WORKS INC.	NOx
Facility ID	Cycle	Facility Name	Market
40030	1	LA DYE & PRINT WORKS INC.	NOx
41582	1	LA DYE & PRINT WORKS, INC.	NOx
12912	2	LIBBEY GLASS, INC	NOx

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83102	2	LIGHT METALS INC	NOx
31046	2	LISTON BRICK COMPANY OF CORONA	NOx
95524	2	LOMITA GASOLINE COMPANY INC	NOx
14229	2	LORBER INDUSTRIES OF CALIFORNIA	NOx
58622	2	LOS ANGELES COLD STORAGE CO	NOx
7931	1	LOS ANGELES PAPER BOX & BOARD MILLS	NOx
13976	1	LUCKY STORES INC.	NOx
800080	2	LUNDAY-THAGARD OIL CO	NOx
103672	1	MAGUIRE THOMAS PARTNERS	NOx
14049	2	MARUCHAN INC	NOx
3029	2	MATCHMASTER DYEING & FINISHING INC	NOx
83444	2	MCGAW INC	NOx
2825	1	MCP FOODS INC.	NOx
101843	1	MCWHORTER TECHNOLOGIES INC.	NOx
100844	2	MEDALLION CALIF. PROPERTIES	NOx
14855	1	MILLER BREWING COMPANY	NOx
800088	2	MINNESOTA MINING & MFG CO	NOx
12372	1	MISSION CLAY PRODUCTS	NOx
25058	2	MOBIL OIL CORP, WEST COAST PIPELINES DIV	NOx
800094	1	MOBIL OIL CORP., NEWHALL STATION	NOx
17344	1	MOBIL OIL CORP.,WEST COAST PIPELINES DIV	NOx
800089	1	MOBIL OIL CORPORATION	NOx/SOx
16274	2	NABISCO BRANDS INC	NOx
12428	2	NATIONAL GYPSUM CO	NOx
40483	2	NELCO PROD. INC	NOx
16531	2	NEVILLE CHEM CO	NOx
800099	1	NI IND INC, NORRIS DIV (VERNON) NO. 1	NOx
82022	2	NORRIS PLUMBING FIXTURES, MANSFIELD PLUMB	NOx
800167	2	NORTHROP CORP	NOx
62897	2	NORTHROP CORP, B-2 DIV	NOx
18294	1	NORTHROP CORP., AIRCRAFT DIV.	NOx
50813	2	O'BRIEN CALIF COGEN LTD	NOx
104018	2	ODEBRECHT CONTRACTORS OF CALIF	NOx
89248	2	OLD COUNTRY MILLWORK INC	NOx
47781	1	OLS ENERGY-CHINO C/O ENERGY INITIATIVES	NOx
42577	2	ONTARIO COGEN (IPT ENERGY)	NOx
7427	1	OWENS-BROCKWAY GLASS CONTAINER	NOx/SOx
Facility ID	Cycle	Facility Name	Market
35302	2	OWENS-CORNING FIBERGLASS	NOx/SOx
23542	1	P. W. GILLIBRAND COMPANY	NOx/SOx
20564	2	PACIFIC CLAY PRODUCTS	NOx
17953	1	PACIFIC CLAY PRODUCTS INC.	NOx

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45746	2	PACIFIC COAST BLDG PRODS INC,PABCO PAPER	NOx/SOx
60531	2	PACIFIC FABRIC FINISHING	NOx
2946	1	PACIFIC FORGE, INC.	NOx
24887	2	PACIFIC TUBE CO	NOx
800208	2	PAPER PAK PROD. INC	NOx
800183	1	PARAMOUNT PETROLEUM CORPORATION	NOx/SOx
19989	2	PARKER HANNIFIN AEROSPACE CORP	NOx
20899	2	PERCEPTION LAMINATES	NOx
9729	1	PGP INDUSTRIES, INC.	NOx
800103	1	POWERINE OIL COMPANY	NOx/SOx
42630	1	PRAXAIR (UNION CARBIDE)	NOx
7416	1	PRAXAIR (UNION CARBIDE)	NOx
75411	1	PRECISION SPECIALTY METALS INC.(PSM)	NOx
136	2	PRESS FORGE CO	NOx
22808	2	PRICE PFISTER INC	NOx
55221	2	PROGRESSIVE CUSTOM WHEEL	NOx
102969	2	QUEEN CARPET CORP., TUFTEX CARPET DIVISION	NOx
8547	1	QUEMETCO INC.	NOx/SOx
19167	2	R J NOBLE COMPANY	NOx
3585	2	R. R. DONNELLEY & SONS CO, LA MFG DIV	NOx
20604	2	RALPHS GROCERY CO	NOx
346	1	RECOT, INC.	NOx
66226	2	RED LION HOTEL /ORANGE COUNTY AIRPORT	NOx
15544	2	REICHHOLD CHEMICALS INC	NOx
800109	1	REYNOLDS METALS COMPANY	NOx
800131	1	RHONE-POULENC BASIC CHEMICALS COMPANY	NOx/SOx
61722	2	RICOH ELECTRONICS INC	NOx
108113	1	RIDGEWOOD/CALIFORNIA POWER PARTNERS, LP	NOx
800182	1	RIVERSIDE CEMENT COMPANY	NOx/SOx
98812	2	RMS FOUNDATION INC	NOx
108805	1	ROBERTSON READY MIX	NOx
110720	2	ROBERTSON'S READY MIX	NOx
800210	2	ROCKWELL INTERNATIONAL	NOx
14736	2	ROCKWELL INTERNATIONAL, ISC DIV	NOx

Facility ID	Cycle	Facility Name	Market
800259	1	ROCKWELL INTERNATIONAL, ROCKETDYNE DIV.	NOx
800110	2	ROCKWELL INTL	NOx
800111	2	ROCKWELL INTL CORP	NOx
800113	2	ROHR IND INC	NOx
18455	2	ROYALTY CARPET MILLS INC	NOx
93073	1	SABA PETROLEUM INC.	NOx
4242	2	SAN DIEGO GAS & ELECTRIC	NOx
101499	1	SANOFI BIO-INDUSTRIES	NOx
55239	2	SANTA MONICA BAY HOTEL ASSOCIATES LTD	NOx
6505	2	SANWA FOODS INC	NOx
8582	1	SC GAS CO., PLAYA DEL REY	NOx
800128	1	SC GAS CO., ALISO CANYON	NOx
800127	1	SC GAS CO., MONTEBELLO	NOx
14926	1	SC GAS CO., MONTEREY PARK	NOx
11119	1	SC GAS CO., PICO RIVERA	NOx
5973	1	SC GAS CO., VALENCIA	NOx
800125	1	SCE, ALAMITOS	NOx
800123	2	SCE, DOMINGUEZ HILLS	NOx
18763	1	SCE, EL SEGUNDO	NOx
800224	1	SCE, ETIWANDA	NOx
15872	2	SCE, HIGHGROVE	NOx
800126	2	SCE, HUNTINGTON BEACH	NOx
800124	2	SCE, LONG BEACH	NOx
4477	1	SCE, PEBBLY BEACH	NOx
14052	1	SCE, REDONDO	NOx
1026	1	SCE, SAN BERNARDINO	NOx
15504	2	SCHLOSSER FORGE CO	NOx
23907	2	SCHULLER INTERNATIONAL INC	NOx
59547	2	SHARYN STEAM INC	NOx
800115	2	SHELL CHEM CORP (EIS USE)	NOx/SOx
16639	1	SHULTZ STEEL COMPANY,GORDON W.SHULTZ DBA	NOx
85943	2	SIERRA ALUMINUM COMPANY	NOx
54402	2	SIERRA ALUMINUM COMPANY	NOx
101977	1	SIGNAL HILL PETROLEUM	NOx
800204	2	SIMPSON PAPER CO	NOx
82727	2	SMURFIT NEWSPRINT CORPORATION	NOx
9114	1	SOMITEX PRINTS OF CALIFORNIA	NOx
14871	2	SONOCO PRODUCTS CO	NOx
800338	2	SPECIALTY PAPER MILLS INC.	NOx

Facility ID	Cycle	Facility Name	Market
23449	2	STANDARD CONCRETE PROD,INC, MOBILE SAND	NOx
861	1	STAR-KIST FOODS INC.(CAN MAKING PLANT)	NOx
1634	2	STEELCASE INC, WESTERN DIV	NOx
83753	1	STOCKER RESOURCES INC.	NOx
112164	2	STOCKER RESOURCES, INC	NOx
34055	2	SULLY-MILLER CONTRACTING CO,BLUE DIAMOND	NOx
55714	1	SUNLAW COGENERATION PARTNERS I	NOx
55711	1	SUNLAW COGENERATION PARTNERS I	NOx
2083	1	SUPERIOR INDUSTRIES INTERNATIONAL	NOx
7940	2	SWEETHEART CUP CO INC	NOx
3968	1	TABC INC.	NOx
18931	2	TAMCO	NOx
56427	1	TANDEM INDUSTRIES	NOx
14944	1	TECHALLOY COMPANY, INC.	NOx/SOx
110671	1	TELEVISION CITY COGEN	NOx
800223	1	TEXACO REFINING & MARKETING INC.	NOx/SOx
800222	1	TEXACO REFINING & MARKETING INC.	NOx/SOx
11435	2	THE PQ CORP	NOx/SOx
97081	1	THE TERMO COMPANY	NOx
7053	1	THERMO ELECTRON CORP., CAL-DORAN	NOx
800330	1	THUMS LONG BEACH COMPANY	NOx
800325	2	TIDELANDS OIL PRODUCTION CO	NOx
68122	2	TIDELANDS OIL PRODUCTION CO	NOx
68118	2	TIDELANDS OIL PRODUCTION CO	NOx
68117	2	TIDELANDS OIL PRODUCTION CO	NOx
43436	1	TIMCO	NOx
800213	2	TIMES MIRROR CO	NOx
55758	1	TISSURAMA INDUSTRIES INC.	NOx
109229	1	TORCH OPERATING CO	NOx
109198	2	TORCH OPERATING CO	NOx
108763	2	TORCH OPERATING CO	NOx
108616	1	TORCH OPERATING CO	NOx
800363	1	TOSCO	NOx/SOx
800362	2	TOSCO	NOx/SOx
800192	2	TRANS WORLD AIRLINES INC	NOx
55865	2	TRANSAMERICAN PLASTICS CORP	NOx
10057	2	TREASURE CRAFT	NOx
11674	1	TRI-ALLOY INC.	NOx
800218	1	TRW INC.	NOx
800219	2	TRW INC.	NOx
800026	1	ULTRAMAR INC.	NOx/SOx
Facility ID	Cycle	Facility Name	Market

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60342	2	UNITED STATES CAN CO	NOx
1073	1	UNITED STATES TILE COMPANY	NOx
800149	2	US BORAX & CHEM CORP	NOx
800153	2	US GOVT, NAVY DEPT LB SHIPYARD	NOx
6281	2	US, MARINE CORPS AIR STATION,EL TORO	NOx/SOx
800150	1	US GOVT., AF DEPT, MARCH AFB	NOx
800154	1	US GOVT., MARINE CORPS AIR STATION	NOx
18695	1	US GYPSUM CO	NOx
12185	2	US GYPSUM CO	NOx/SOx
73022	2	USAIR INC	NOx
61589	2	VANGUARD ENERGY SYSTEMS	NOx
54723	2	VANGUARD ENERGY SYSTEMS	NOx
14502	2	VERNON CITY, LIGHT & POWER DEPT	NOx
14495	2	VISTA METALS CORPORATION	NOx
93346	1	WAYMIRE DRUM CO.,INC.	NOx
50098	1	WEST COAST RENDERING COMPANY	NOx
42775	1	WEST NEWPORT OIL COMPANY	NOx/SOx
40102	2	WESTERN DYE HOUSE INC	NOx
17956	1	WESTERN METAL DECORATING COMPANY	NOx
45953	1	WESTERN WHEELS CORPORATION	NOx
1962	2	WEYERHAEUSER PAPER CO	NOx
51620	1	WHEELABRATOR NORWALK ENERGY COMPANY	NOx

APPENDIX B

RECLAIM FACILITIES CEASING OPERATION

AQMD staff is aware the following RECLAIM facilities that have permanently ceased all operations and gone out of business during 1996 compliance year. The reasons for shutdown cited below are based on AQMD staff's best available information.

Facility ID 6394
Facility Name ANAHEIM FOUNDRY INC.
City and County Anaheim, Orange County
SIC 3321
Pollutants SOx
1994 Allocation 11,926 lb.
Reason for Shutdown: This facility was bought out by one of their competitors for the specific purpose of shutting down the facility.

Facility ID 19212
Facility Name BP CHEMICALS (HITCO) INC, FIBERS & MATRLS
City and County Santa Ana, Orange County
SIC 3229
Pollutants NOx
1994 Allocation 11,742 lb.
Reason for Shutdown: This facility was contacted by AQMD staff. The reason they gave for going out of business was competition from their competitors.

Facility ID 14092
Facility Name CPC INTERNATIONAL INC, BEST FOODS DIV
City and County Santa Fe Springs, Los Angeles County
SIC 2075
Pollutants NOx
1994 Allocation 4,718 lb.
Reason for Shutdown: The facility closed for economic reasons. The company sold this plant and has moved the operation to the midwest.

Facility ID 83278
Facility Name CROWN BEVERAGE PACKAGING INC.
City and County Van Nuys, Los Angeles County
SIC 3411
Pollutants NOx
1994 Allocation 22,398
Reason for Shutdown: This facility was closed due to damage caused by the Northridge earthquake of January 17, 1994. The facility stated that it was too costly to rebuild.

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Facility ID 73790
Facility Name LUCKY CONTAINER INC
City and County Vernon, Los Angeles County
SIC 3086
Pollutants NOx
1994 Allocation 3,042 lb.
Reason for Shutdown: The facility has gone out of business due to economic reasons.

Facility ID 79397
Facility Name OWENS-BROCKWAY
City and County Pomona, Los Angeles County
SIC 3221
Pollutants NOx/SOx
1994 Allocation NOx: 394,836 lb.
SOx: 116,560 lb.
Reason for Shutdown: According to a facility press release, the plant was closed because it was no longer profitable to operate the plant due to declining business and high state processing fees for recycled beverage containers.

APPENDIX C

RULE INTERPRETATION AND IMPLEMENTATION GUIDANCE DOCUMENTS

AQMD staff has produced Rule Interpretation and Implementation Guidance documents in order to clarify program requirements in response to specific concerns expressed by RECLAIM participants. These documents are available from AQMD's RECLAIM & Title V Implementation Team and include:

Rule Interpretation Documents:

Exclusive Use of Timers	October 27, 1994
Missing Data—Large Sources	October 27, 1994
Non-Operated Equipment	January 5, 1995
Alternative Monitoring and Reporting Systems	May 9, 1995
Inordinate Cost Burden	September 22, 1995
Monitoring Parameters for Strip Charts and Computer Printouts	November 14, 1995
Determination of the actual number of facility operating days used in the automatic and voluntary conversions of Emission Reduction Credits (ERCs) to RECLAIM Trading Credits (RTCs)	May 17, 1996
Provisional Approval and Applicability of Command and Control Rules	June 6, 1996
Provisional Approval for Alternative Monitoring Devices for Major SO _x Sources and Major NO _x Sources	July 9, 1996

Implementation Guidance Documents:

Equipment Reconfiguration	October 3, 1994
Natural Gas Flow Correction to Standard Conditions	October 3, 1994
Physical Identification of Monitoring and Reporting Equipment	October 3, 1994
Early Use of CEMS	October 10, 1994
Elapsed Time Meters and Internal Combustion Engines	October 10, 1994
Provisional CEMS Approval	January 3, 1995
Non-Operated Equipment	January 5, 1995
Reformulated Gasoline (RFG) projects & RECLAIM Allocations	October 16, 1996

APPENDIX D

RECLAIM RULE AMENDMENTS IN 1996 COMPLIANCE YEAR

The Governing Board has amended Regulation XX eight times since initially adopting it in October 1993. These amendments have incorporated a wide variety of changes into the RECLAIM program, ranging from clerical corrections through changes in monitoring requirements and emission factors used for calculating allocations of RECLAIM Trading Credits to new program elements. The amendments which were adopted during the 1996 compliance year (January 1, 1996 through June 30, 1997) are summarized in greater detail below in reverse chronological order:

- The most recent amendments to Regulation XX were adopted by the Governing Board April 11, 1997. These amendments detail what types of emissions from equipment operated by contractors are considered part of the facility's emissions for purposes of determining compliance with RECLAIM's annual emission limits.
- The February 14, 1997 amendments to Regulation XX included a wide variety of changes which collectively constitute fine tuning of the program based upon experience gained during the initial years of implementation. These changes largely address issues which were not foreseeable during program development. The amendments include:
 - modification and addition of several definitions,
 - correction of the end point emission factor for Fluid Catalytic Cracking Units;
 - clarification of Facility Permit re-issuance;
 - creation of a new source review modeling exemption for certain standby equipment;
 - specification of appropriate monitoring, reporting, and recordkeeping requirements for non-operated major NO_x sources, and non-operated and infrequently-operated major SO_x sources; allowance of non-operated large NO_x sources to delay source testing until they start operation; and exemption of boilers and heaters from tune-up requirements during periods of non-operation;
 - allowance of a 12 month time period after start of operation of a new major source at an existing facility for installation and certification of CEMS;
 - addition of guidelines for determining emissions during breakdown periods; and
 - addition of rule language to increase the time extension from 12 to 24 hours for reporting of total daily mass emissions if the facility experiences a power, computer, or other system failure that prohibits the report from being made on time.

- Regulation XX was also amended by the Governing Board July 12, 1996. These amendments were necessary to clarify rule requirements and improve monitoring, reporting, and recordkeeping flexibility for RECLAIM facilities. In particular, these amendments:
 - Provided procedures consistent with Rule 430 - Breakdown Provisions for reporting equipment breakdowns affecting RECLAIM pollutants;
 - Clarified RTC allocations after compliance year 2010;
 - Consolidated requirements for reports regarding RECLAIM issues;
 - Clarified requirements for Super Compliant facilities;
 - Provided a period of time for CEMS repairs;
 - Added language to clarify monitoring, reporting, recordkeeping, and other requirements;
 - Provided more accurate emission factors for cement kilns; and
 - Allowed for an alternative to the NO_x ending emission factor for cement kilns based on a demonstration plan (refer to the discussion of Technology Reviews, below, for further information regarding the amendments pertaining to cement kilns).

APPENDIX E

JOB IMPACTS ATTRIBUTED TO RECLAIM

The job impacts resulting from the RECLAIM program during the 1996 compliance year are assessed by examining data in Annual Permit Emissions Program (APEP) reports submitted by RECLAIM facilities. The APEP reports for both Cycle 1 and 2 facilities requested the facility operators to include assessments of job increases and decreases which occurred during the compliance year and an assessment of the extent to which any increase or decrease in the number of jobs is attributable to the RECLAIM program. The detailed information for facilities which reported job gains and losses for compliance year 1996 are summarized as follows:

Facilities with actual job gains or losses attributable to RECLAIM:

Facility ID	800295
Facility Name	Henkel Corporation
City and County	Los Angeles, Los Angeles County
SIC	2899
Pollutant(s)	NOx
Cycle	1
Job Gain	0
Job Loss	3 (2 attributed to RECLAIM)

According to the facility contact, "the cost of RECLAIM compliance reduced profitability. It costs more to operate the plant under RECLAIM and decreases the efficiency of equipment."

Facility ID	16274
Facility Name	Nabisco Brands Inc
City and County	Buena Park, Orange County
SIC	2052
Pollutant(s)	NOx
Cycle	2
Job Gain	1 (all attributed to RECLAIM)
Job Loss	0

A regulatory engineer was permanently hired to handle RECLAIM compliance and other environmental issues.

The following facilities' APEP forms indicated that they experienced job losses due to RECLAIM. Staff spoke with the facility representatives to ascertain the extent to which these job losses were the result of RECLAIM. The ensuing discussions revealed that, for the first facility, it is impossible to determine if or to what extent RECLAIM contributed to the jobs losses. The second facility experienced a short-term shutdown which was not the result of RECLAIM but did help the facility maintain emissions below its annual allocation. The third facility experienced a partial shutdown which did not result from

RECLAIM but did reduce emissions, thereby helping the facility maintain compliance with RECLAIM:

Facility ID 800150
Facility Name March Air Force Base
City and County March AFB, Riverside County
SIC 9711
Pollutant(s) NOx
Cycle 1
Job Gain 0
Job Loss 8,570
Comments March Air Force Base was on the list of military base closures developed by Congress. Mission realignment was the main criterion used to develop the list of bases to be closed down. As a result, approximately 8,570 workers were displaced at March AFB. However, it is impossible to determine whether or not air quality control regulations contributed in the decision to close this base.

Facility ID 12372
Facility Name Mission Clay Products
City and County Corona, Riverside County
SIC 3259
Pollutant(s) NOx
Cycle 1
Job Gain 0
Job Loss 12
Comments This facility shuts down production when inventory is adequate to meet projected sales for the rest of the year. Shutting down the process also reduces emissions, and therefore, the required amount of RTCs. The production requires 12 employees. These employees are laid off when there is no production. However, the process is only temporarily suspended until the start of a new year. The same 12 jobs will be needed again when the process is re-started. Therefore, there is no permanent job loss.

Facility ID 22808
Facility Name Price Pfister
City and County Pacoima, Los Angeles County
SIC 3432
Pollutant(s) NOx
Cycle 2
Job Gain 0
Job Loss 598
Comments People were laid-off when the foundry in this facility was shut down because of EPA lead regulations. However, the facility contends that the foundry shut down lowered RECLAIM emissions with the shutdown of the furnaces that serve the foundry.

The following facilities experienced job losses which did not result from RECLAIM:

Facility ID 800154
Facility Name US Govt, Marine Corps Air Station
City and County Tustin, Orange County
SIC 9711
Pollutant(s) NOx
Cycle 1
Job Gain 0
Job Loss 3
Comments Three employees were transferred to other government agencies because of the impending base closure which is scheduled for December, 1999.

Facility ID 4242
Facility Name San Diego Gas and Electric
City and County Moreno Valley, Riverside County
SIC 4922
Pollutant(s) NOx
Cycle 2
Job Gain 0
Job Loss 4
Comments This facility lost four employees during the 1996 compliance year due to downsizing. None of the job losses were attributed to RECLAIM. No actual jobs were added due to RECLAIM. However, many additional hours of work were incurred by engineering staff at corporate office.

The following facilities did not experience any increases or decreases in their number of jobs, but did experience increased workload attributed to RECLAIM:

Facility ID 5973
Facility Name Southern California Gas
City and County Valencia, Los Angeles County
SIC 4922
Pollutant(s) NOx
Cycle 1
Job Gain 0
Job Loss 0
Comments No actual job was added in this facility. The duties of an employee was distributed among his co-workers so that his sole responsibility is RECLAIM compliance.

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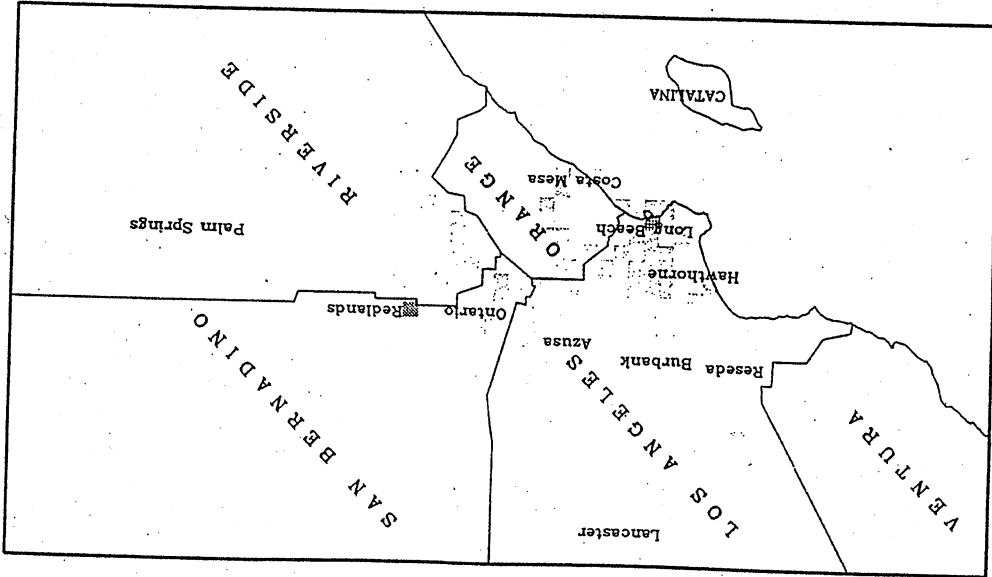
Facility ID	19167
Facility Name	RJ Noble Company
City and County	Orange, Orange County
SIC	2951
Pollutant(s)	NOx
Cycle	2
Job Gain	0
Job Loss	0
Comments	No actual job gain but hiring of consultants to prepare RECLAIM reports has increased.

Facility ID 19167
Facility Name RJ Noble Company
City and County Orange, Orange County
SIC 2951
Pollutant(s) NOx
Cycle 2
Job Gain 0
Job Loss 0
Comments No actual job gain but hiring of consultants to prepare RECLAIM reports has increased.

APPENDIX F
QUARTERLY NOX EMISSION MAPS

RECLAIM FACILITIES

Certified NOx Emissions (Tons) From 10/97 To 12/97

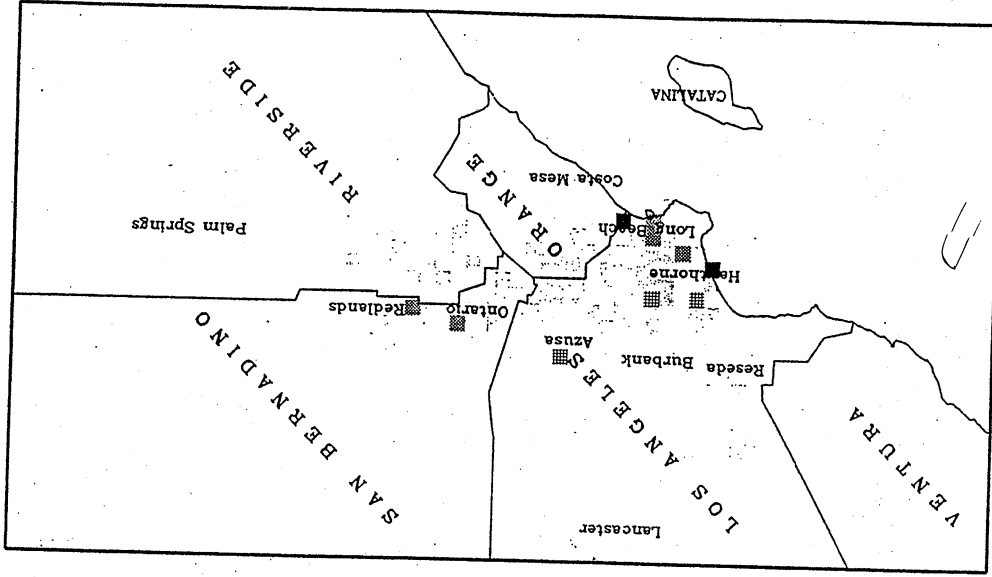


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590000

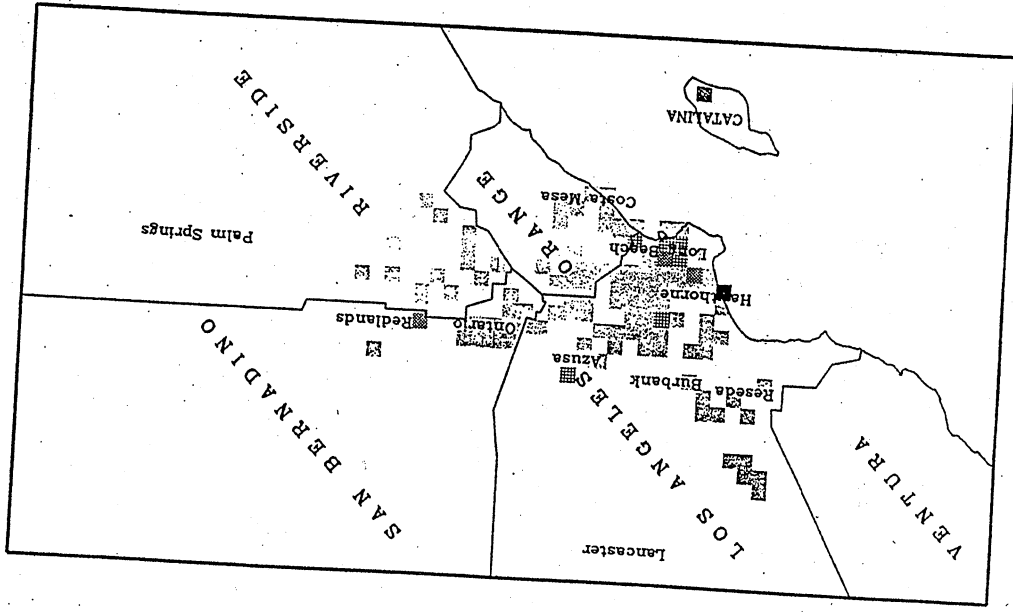
RECLAIM FACILITIES

Certified NOx Emissions (Tons) From 7/97 To 9/97

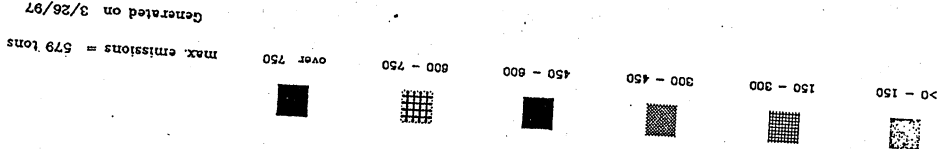


Generated on 2/04/98
 max. emissions = 810 tons

990000

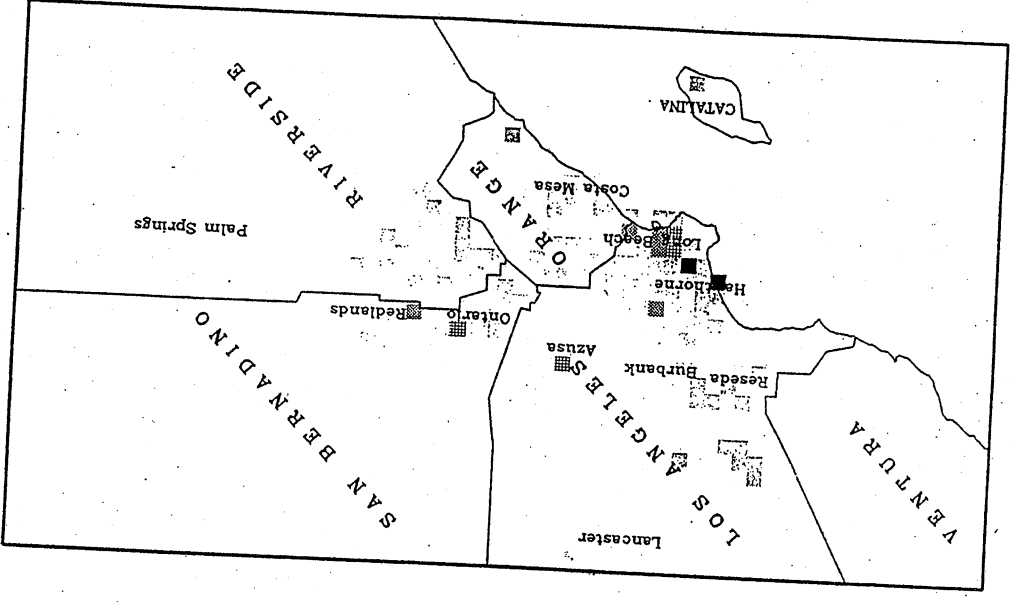


RECLAIM Facilities
 Certified NOx Emissions (Tons) From 10/96 To 12/96

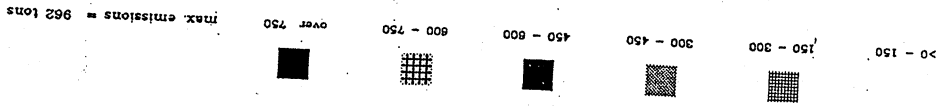


max. emissions = 579 tons
 Generated on 3/26/97

6300000



RECLAIM Facilities
 Certified NOx Emissions (Tons) From 7/96 To 9/96

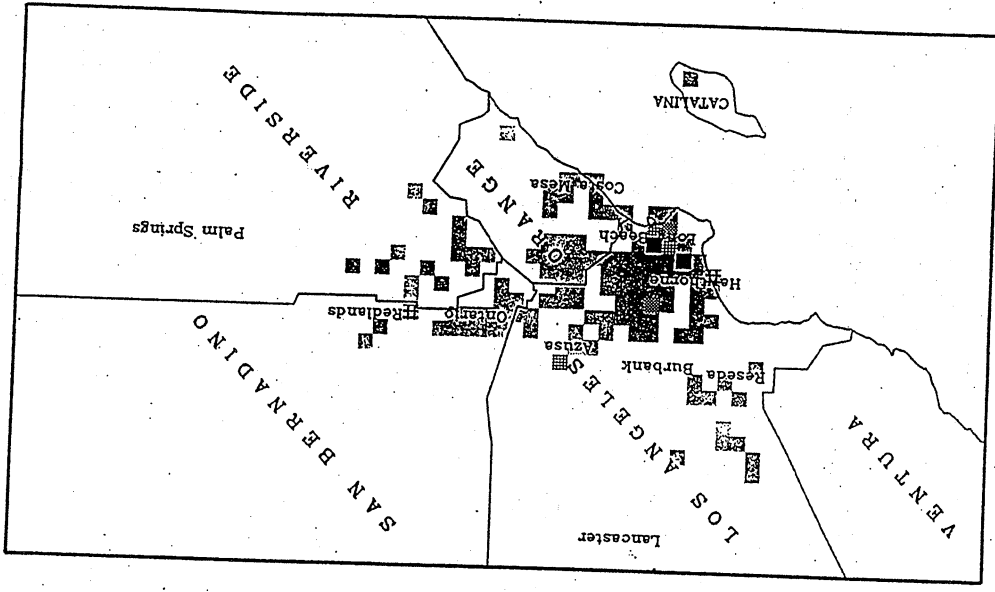
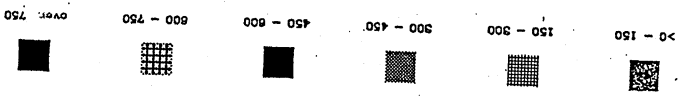


max. emissions = 962 tons
 3/26/97

0200000

Generated on 3/26/97

max. emissions = 1597 tons

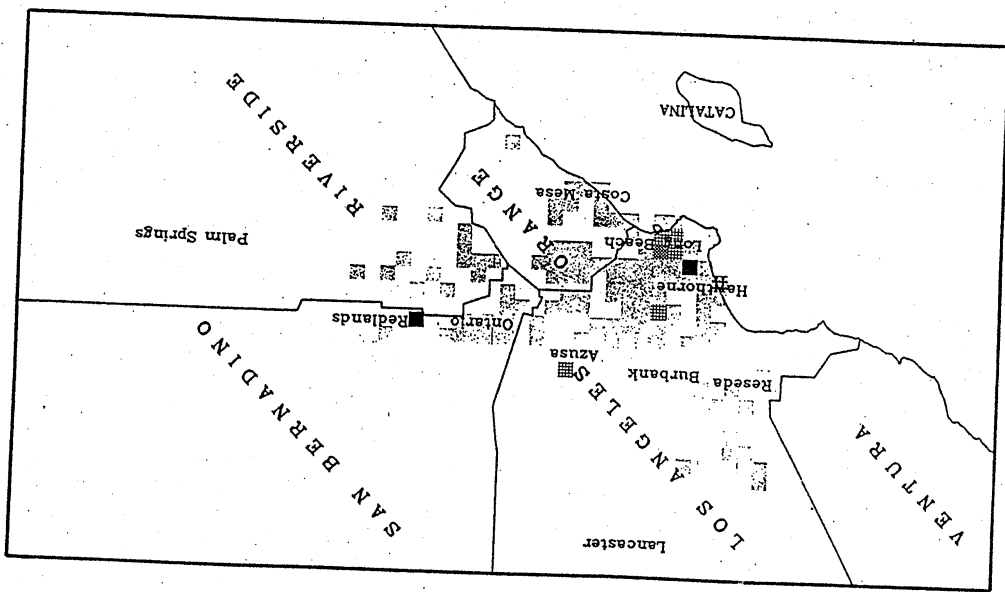
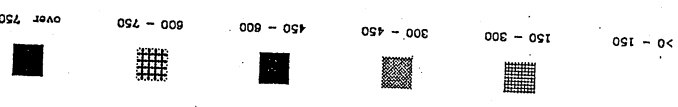


0000072

RECLAIM Facilities
Certified NOx Emissions (Tons) From 1/96 To 3/96

Generated on 3/26/97

max. emissions = 920 tons

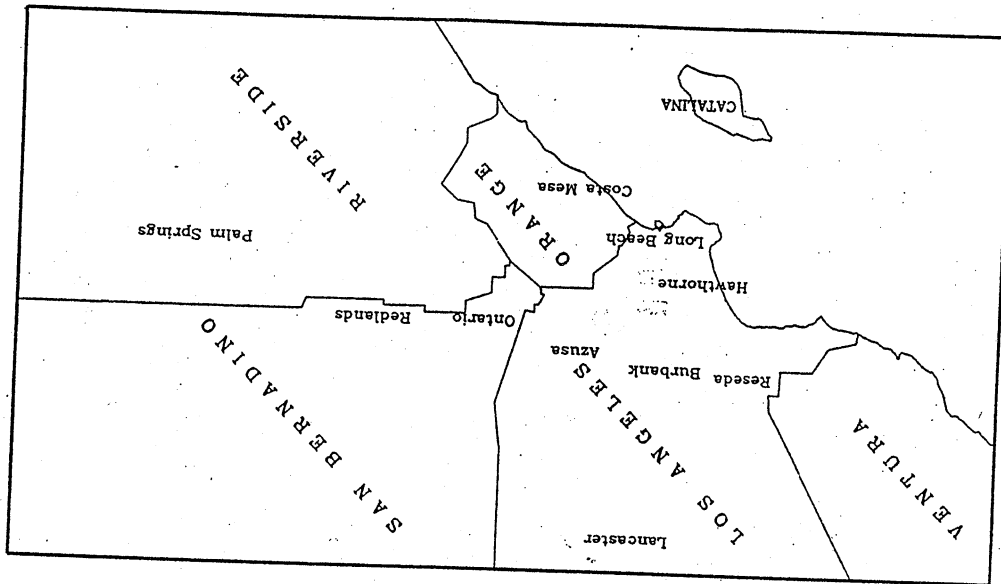


0000011

RECLAIM Facilities
Certified NOx Emissions (Tons) From 4/96 To 6/96

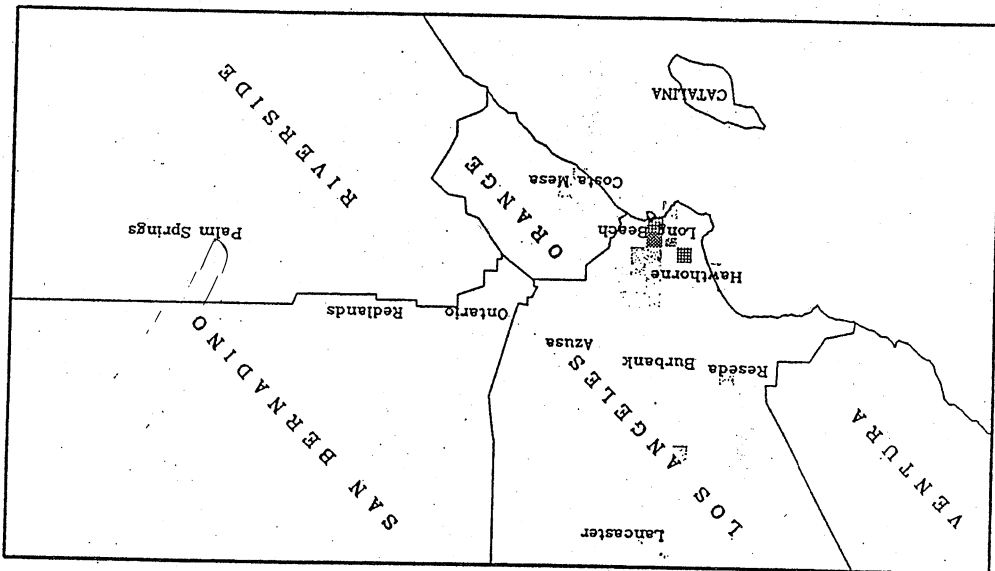
APPENDIX G
QUARTERLY SOX EMISSION MAPS

RECLAIM Facilities
Certified SOx Emissions (Tons) From 10/97 To 12/97



Generated on 2/04/98
max. emissions = 133 tons

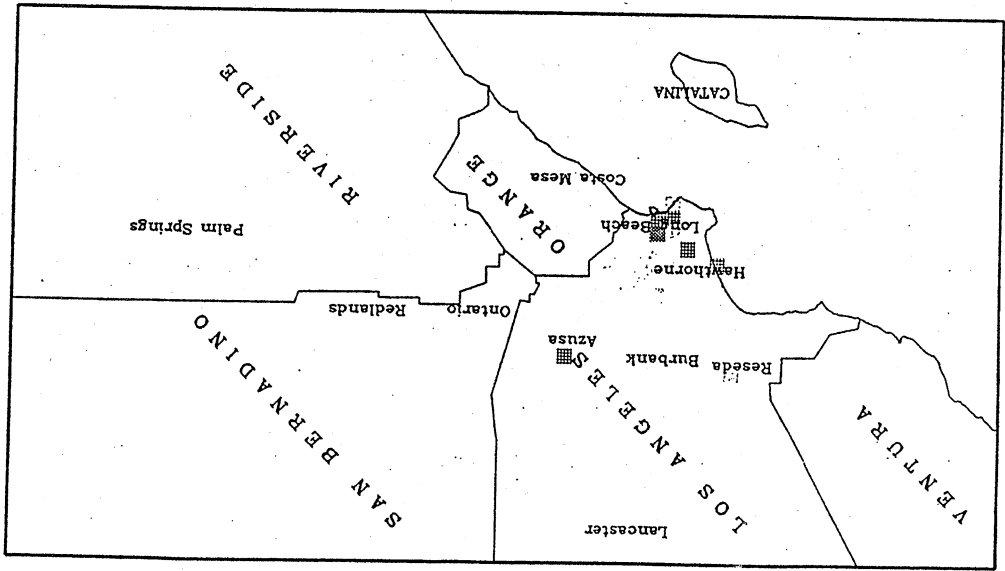
>0 - 150	150 - 300	300 - 450	450 - 600	600 - 750	over 750
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Generated on 2/04/98
max. emissions = 353 tons

970000

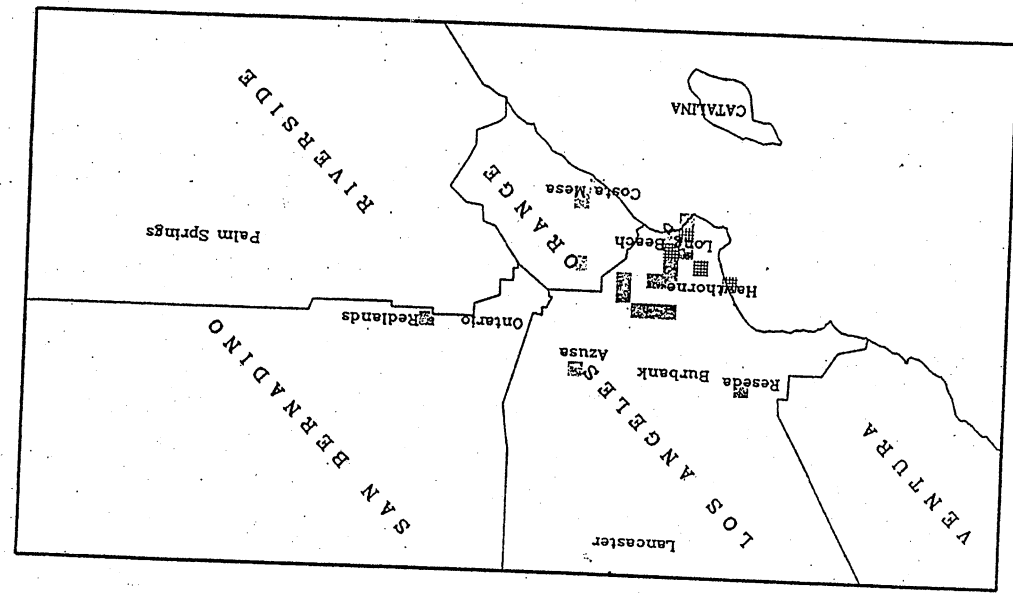
RECLAIM Facilities
Certified SOx Emissions (Tons) From 4/97 To 6/97



Generated on 2/04/98
max. emissions = 447 tons

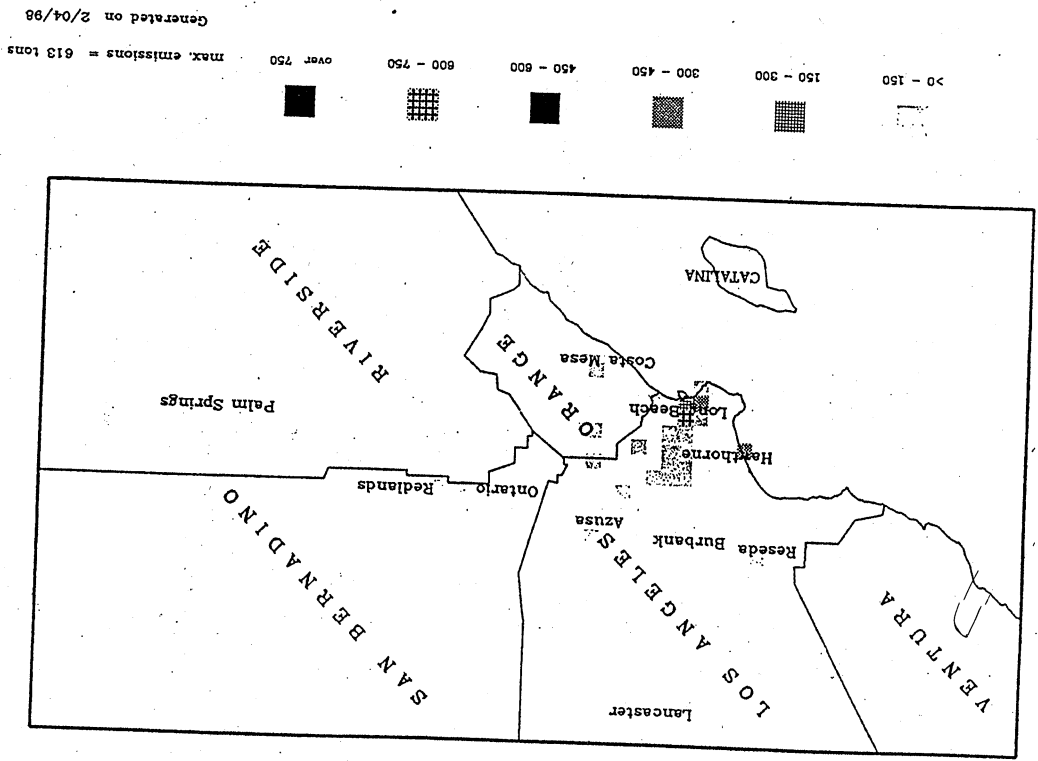
570000

RECLAIM Facilities
Certified SOx Emissions (Tons) From 7/97 To 9/97



RECLAIM Facilities
 Certified SOx Emissions (Tons) From 10/96 To 12/96

840000

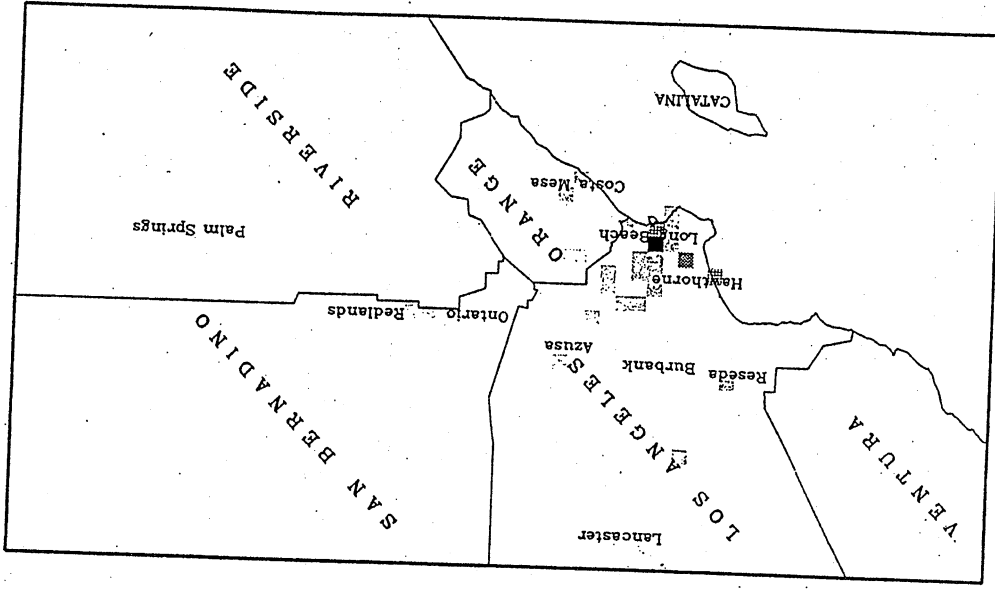


RECLAIM Facilities
 Certified SOx Emissions (Tons) From 1/97 To 3/97

240000

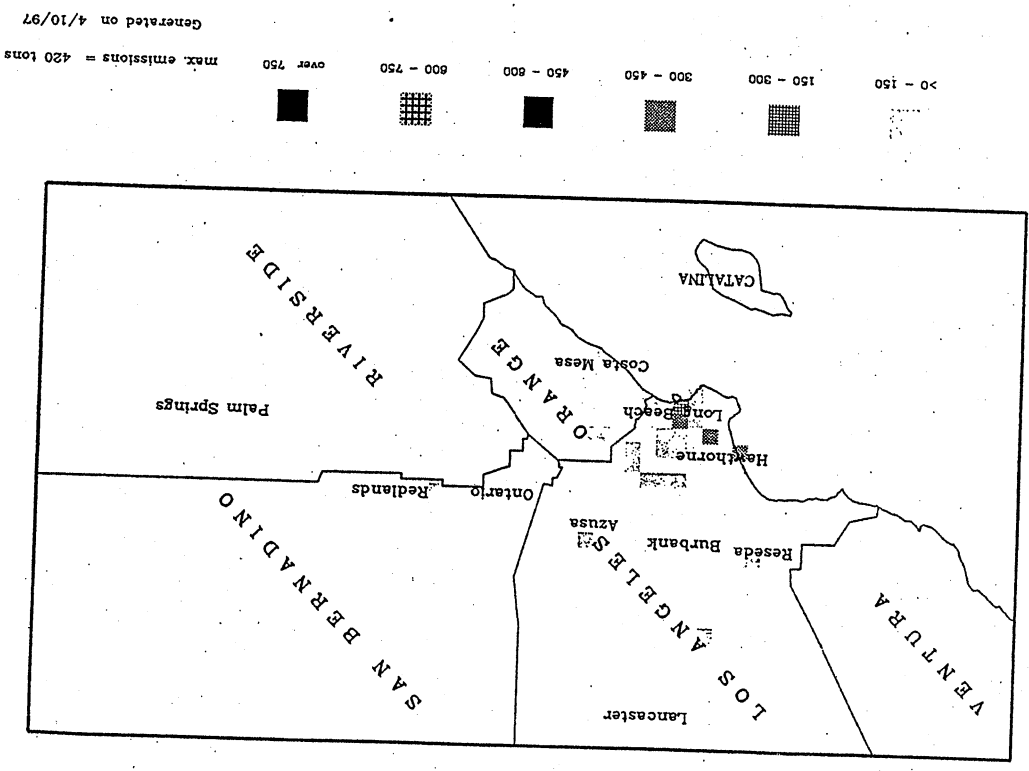
Generated on 3/26/97
 max. emissions = 299 tons

Generated on 2/04/98
 max. emissions = 613 tons



RECLAIM Facilities
 Certified SOx Emissions (Tons) From 4/96 To 6/96

080000



RECLAIM Facilities
 Certified SOx Emissions (Tons) From 7/96 To 9/96

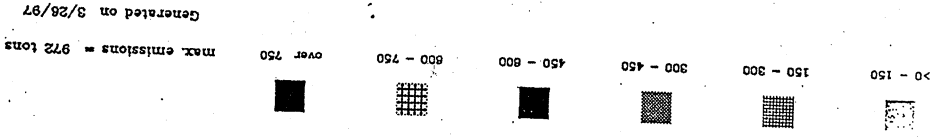
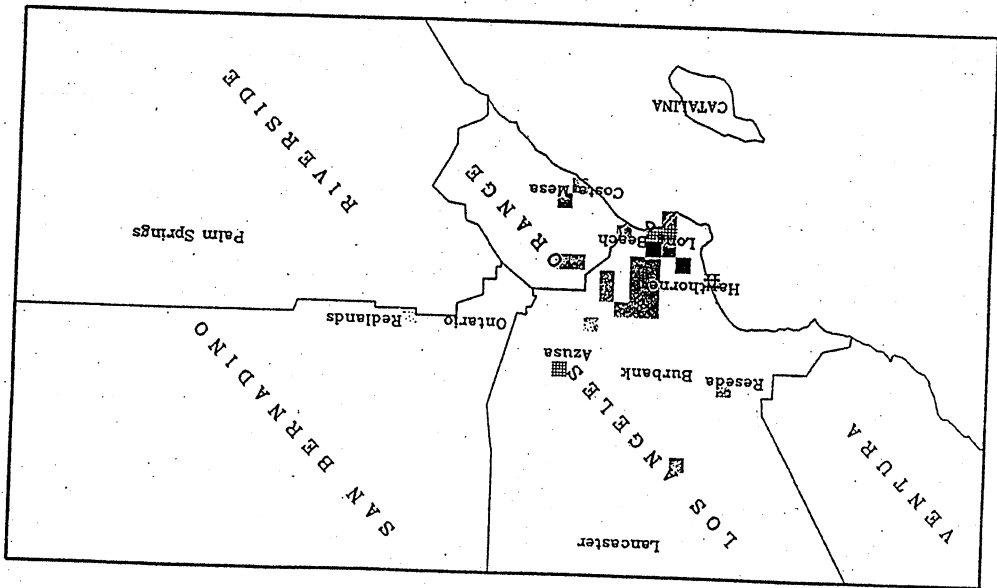
670000

Generated on 3/26/97
 max. emissions = 468 tons

Generated on 4/10/97
 max. emissions = 420 tons

RECLAIM Facilities

Certified SOx Emissions (Tons) From 1/96 To 3/96



max. emissions = 972 tons

Generated on 3/28/97

000081