BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

FINAL

ENVIRONMENTAL IMPACT REPORT

ALTERNATIVE COMPLIANCE PLAN TO USE INTERCHANGEABLE EMISSION REDUCTION CREDITS TO COMPLY WITH THE NO_X EMISSION LIMITS OF BAAQMD RULE 9-10

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CHAPTER 1
INTRODUCTION

1.1 SUMMARY OF PROJECT

This environmental impact report (EIR) is an informational document intended to disclose to decision-makers and to the public the environmental consequences of the implementation of an Alternative Compliance Plan (ACP) proposed by Valero Refining Company-California (Valero) for its refinery located in Benicia, California (refinery).

Valero proposes to use an ACP to comply with a limit on emissions of nitrogen oxides (NOx) in Bay Area Air Quality Management District (BAAQMD or the District) Regulation 9, Rule 10 (Rule 9-10). Rule 9-10 limits NOx emissions from certain refinery combustion sources to 0.033 pounds NOx per million BTU (lb/mmBTU), calculated as a daily average of the entire group of affected units. Rule 9-10 imposed this limit on combustion units accounting for 50% of the total heating capacity effective July 1, 2000, and on all affected units effective July 1, 2002. Under Valero's proposed ACP, Valero will comply with Rule 9-10 by using interchangeable emission reduction credits (IERCs) created pursuant to BAAQMD Regulation 2, Rule 9 (Rule 2-9) by over-controlling NOx emissions from two carbon monoxide (CO) boilers at the refinery.

BAAQMD originally approved Valero's ACP based on a negative declaration, but the use of the negative declaration was challenged in court. Based on evidence supporting a fair argument that Valero's ACP could have a potentially significant impact on air quality, the court ordered BAAQMD to prepare an EIR before approving Valero's ACP. To determine the scope of this EIR, BAAQMD subsequently prepared a revised Initial Study to re-assess what effects on the environment Valero's use of the proposed ACP has the potential to cause. (See Appendix F.) The revised Initial Study concluded that the project would have either no impact or a less than significant impact on all environmental factors other than air quality.

1.2 ORGANIZATION AND SUMMARY OF THIS EIR

This document is organized into the following chapters:

- Chapter 1 - Introduction: Summarizes this EIR.
- Chapter 2 - Project Description: Provides a detailed description of Valero's ACP, and of Valero's generation of IERCs for use in the ACP. This chapter also describes prior litigation related to the ACP and IERCs that ultimately led to the court decision requiring the preparation of this EIR.

- Chapter 3 - Environmental Analysis: Contains an analysis of the proposed ACP's impacts on air quality, including (i) a description of the environmental setting, (ii) the standards for determining whether the ACP will have a significant impact on the environment, and (iii) an assessment of the environmental impacts of the proposed project. This chapter concludes that Valero's ACP will not have a significant impact on air quality and therefore no mitigation measures are required.

- Chapter 4 - Alternatives: Describes a feasible alternative means to comply with Rule 9-10, i.e., installing controls directly on affected units, and compares this alternative to Valero's proposed ACP. Since there are no significant impacts from Valero's ACP, the District is not required to consider alternatives. Notwithstanding this, Chapter 4 concludes that Valero's ACP is more beneficial to the environment than the alternative of installing controls on affected units.

1.3 USE OF THIS DOCUMENT BY BAAQMD AND OTHER AGENCIES

In accordance with CEQA, BAAQMD must consider the environmental implications of Valero's ACP prior to determining whether to approve it. Valero presently intends to use the ACP to comply with Rule 9-10 on an ongoing basis and the ACP will require annual approval by BAAQMD. Each approval of an ACP by the District includes an opportunity for public review and comment. This EIR is intended to serve as the environmental analysis not only for BAAQMD's current approval of the ACP, but also for any subsequent ACP approvals required by BAAQMD, except as otherwise required by CEQA Guidelines §15162.

BAAQMD is not aware of any other agencies that will need to use this EIR or that have approval authority over Valero's ACP.

CHAPTER 2
PROJECT DESCRIPTION

2.1 PROJECT OBJECTIVE

Valero's objective is to comply with BAAQMD Rule 9-10's limit on NOx emissions from certain heaters and boilers at its Benicia refinery by using an alternative compliance plan (ACP) under District Rule 2-9. Valero's proposed ACP would use IERCs generated by over-controlling two CO boilers at the refinery to demonstrate compliance with Rule 9-10.

Figure 2-1 shows the general location of the refinery, and **Figure 2-2** is a site plan of the refinery showing locations of the CO boilers and the other affected units.

2.2 DESCRIPTION OF RULE 9-10 AND RULE 2-9

2.2.1 RULE 9-10

BAAQMD Rule 9-10 is designed to reduce NOx emissions from the refineries located in the Bay Area. Among other things, Rule 9-10-301 limits NOx emission rates from certain combustion sources to a daily average of 0.033 lb/mmBTU of heat input, calculated on a refinery-wide average. Combustion sources subject to the 0.033 lb/mmBTU limit (referred to as "affected units") include refinery boilers, steam generators and process heaters, excluding CO boilers. The daily average emission limit applies to the group of affected units as whole, not to individual units within the group. Under Rules 9-10-403 and 9-10-302, this emission limit takes effect in two phases. It applies to affected units accounting for 50% of the total heating capacity of all affected units effective July 1, 2000 (Phase 1), and to all affected units effective July 1, 2002 (Phase 2).[1] **Table 2-1** identifies the affected units at Valero's refinery.

Under Rules 9-10-403 and 9-10-304, Rule 9-10 also limits NOx emissions from CO boilers located at refineries. Effective May 31, 1995, NOx emissions from CO boilers were limited to 300 ppm (adjusted to 3% O_2). Rule 9-10-303.1. Effective July 1, 2002, NOx emissions from CO boilers will be limited to 150 ppm (adjusted to 3% O_2).

Rule 9-10 is a Best Available Retrofit Control Technology ("BARCT") rule. The provisions relevant to this ACP have not been incorporated into the federally-required State Implementation Plan.

2.2.2 RULE 2-9

One option to comply with Rule 9-10-301 is to put controls on the affected units themselves, so that the average NOx emission rate from all affected units complies with the daily average limit specified in Rule

[1] Rule 9-10 actually contains two sets of deadlines, one set for refineries that do not implement "Clean Fuels" projects and a separate later set for refineries that implement "Clean Fuels" projects. All refineries in the Bay Area, including Valero's Benicia refinery, implemented Clean Fuels projects, so only the later set of deadlines is discussed in this EIR.

9-10-301. Rule 2-9 provides an alternative way to comply with Rule 9-10-301, by allowing Valero to reduce NOx emissions more than required elsewhere in the refinery, and, following the specific requirements of Rule 2-9, using the extra emission reductions in satisfaction of emissions reductions that would otherwise be required by Rule 9-10-301. For each calendar year (referred to as a credit generation period), Valero will receive an IERC certificate showing the number of tons of NOx that Valero voluntarily reduced that year. After the certificate is issued, Valero can use the certificate to comply with the emission limits in Rule 9-10.

BAAQMD's Board of Directors adopted Rule 2-9, titled the Interchangeable Emission Reduction Credit Rule, on April 7, 1999 in accordance with certain provisions of the California Clean Air Act (Health & Safety Code § 39000 *et seq.*) to create a market-based incentive air pollution control program (Health & Safety Code §§ 39607.5, 39616, 40001 and 40920.6). Health & Safety Code § 39607.5(a) directed the California Air Resources Board (CARB) to "develop, and adopt in a public hearing a methodology for use by [local air pollution control] districts to calculate the value of credits issued for emission reductions from stationary, mobile, indirect, and areawide sources, including those issued under market-based incentive programs, when those credits are used interchangeably." The Legislature declared that "[w]hile traditional command and control air quality regulatory programs are effective in cleaning up the air, other options for improvement in air quality, such as market-based incentive programs, should be explored, provided that those programs result in equivalent emission reductions while expending fewer resources and while maintaining or enhancing the state's economy." Health & Safety Code § 39616(a)(2).

Health & Safety Code § 40001(d)(1) states that "district rules and regulations shall include a process to approve alternative methods of complying with emission control requirements that provide equivalent emission reductions, emissions monitoring, and recordkeeping." Finally, the operative provisions of Health & Safety Code § 40920.6 require all local air pollution control districts to allow the use of emission reduction credits in lieu of compliance with BARCT requirements (such as the 0.033 lb/mmBTU NOx limit of Rule 9-10). Specifically, § 40920.6(c) provides that "a district shall allow . . . emission reduction credits which meet all of the requirements of state and federal law, including, but not limited to, the requirements that those emission reduction credits be permanent, enforceable, quantifiable, and surplus, in lieu of any requirement for [BARCT], if the credit also complies with all district rules and regulations affecting those credits."

Rule 2-9 is also based upon and in compliance with regulations adopted by CARB as required by Health & Safety Code § 39607.5. CARB adopted sections 91500 through 91508 of Title 17, California Code of Regulations (CCR), in response to Health & Safety Code § 39607.5, to establish principles and criteria for local air pollution control districts to use when developing programs to allow the use of interchangeable credits as a compliance alternative for meeting specified air pollution control requirements in district rules and regulations.

Rule 2-9 has certain provisions that help BAAQMD attain and maintain ambient air quality standards, such as requiring that the emissions reductions to be credited be in place and approved by BAAQMD before they can be used in an ACP, and that the credits be discounted by 10% to provide for a net environmental benefit (i.e., emission credits that are applied to meet BARCT regulations must be 10% greater than the actual reduction required by the BARCT regulation). Also, the credits cannot be part of

emission reductions that have already been prescribed in BAAQMD's Clean Air Plan. These aspects of Rule 2-9 ensure that there will be a net benefit in air quality.

2.3 VALERO'S ALTERNATIVE COMPLIANCE PLAN

2.3.2 DESCRIPTION OF THE ACP

Valero proposes to comply with the NOx emission limit of Rule 9-10-301 by using IERCs.[2] Under its ACP, Valero will calculate its actual emissions from heaters and boilers that are subject to the 0.033 lb/mmBTU limit on a daily basis. It will also calculate its "allowable emissions," based on its actual heat usage and the Rule 9-10 emission limit of 0.033 lb/mmBTU. If Valero's actual emissions are higher than the allowable emissions, Valero will provide BAAQMD with IERCs equal to the difference plus 10% (as required by the "environmental surcharge" provision of Rule 2-9-306). Valero's ACP requires quarterly reports showing the amount of credits required and annual reports demonstrating that Valero has sufficient IERCs to satisfy its ACP.

Valero can generate IERCs by voluntarily reducing emissions from a source at its refinery below the source's historical emission level and below all applicable regulatory limits. Only IERCs generated at Valero's refinery can be used in its ACP. In addition, IERC certificates must be issued by BAAQMD and banked before they can be used to satisfy ACP requirements, which means that Valero's emission reductions that lead to IERCs must occur earlier than any emissions from the heaters and boilers above the Rule 9-10 limit.

As described above, Rule 9-10 takes effect in two phases. Phase 1, applicable from July 1, 2000 to July 1, 2002, provides an interim 0.033 lb/mmBTU NOx emission limit applicable to 50% of the heat input capacity of the affected units. Valero selected four refinery units to satisfy the Phase 1 deadline and has been submitting quarterly reports showing its daily calculation of required IERCs as required by Rule 2-9 and its ACP. **Table 2-2** summarizes Valero's quarterly credit usage during Phase 1.

After the July 1, 2002 full implementation date, the 0.033 lb/mmBTU emission limit will apply to all affected heaters and boilers at Valero's refinery. Emissions from all affected units are expected to be about 743 tons/year based on typical operating rates. (See **Table 2-3.)**. Allowable emissions under Rule 9-10 will be about 332 tons/year, which is 411 tons/year less than actual emissions. Thus, with the 10% environmental surcharge, Valero will typically need to provide about 452 tons/year of IERCs (411 x 110%) under its ACP.

[2] ExxonMobil (which owned the refinery until selling it to Valero in May 2000) first informed BAAQMD of its intent to use an ACP to comply with Rule 9-10 when it filed its Rule 9-10 compliance plan in 1996. On February 14, 2000, pursuant to Rule 2-9-303, ExxonMobil submitted an ACP for BAAQMD approval, setting forth its intent to use IERCs to comply with the NOx emission limit of Phase 1 of Rule 9-10 that was scheduled to take effect on July 1, 2000 for units accounting for 50% of the total heating capacity of the affected units. On August 24, 2001, Valero submitted a second ACP for BAAQMD approval, setting forth its plan to use IERCs to comply with Rule 9-10's July 1, 2002 deadline under which all of the affected units at the refinery become subject to the 0.033 lb/mmBTU NOx emission limit. Valero made technical amendments to its application on September 18, 2001 and again on November 14, 2001. The ACP submitted for the July 1, 2002 deadline is essentially identical to the initial ACP except that it covers all affected units, not just those that were subject to the July 1, 2000 deadline. This EIR refers to Valero's two ACP applications collectively as a single ACP. Valero's ACP, as revised, forecasts credit and usage on an ongoing basis to comply with Rule 9-10.

Valero presently intends to continue its ACP indefinitely. The actual quantity of IERCs needed from year-to-year may vary depending on other operating factors that are not part of or caused by the ACP, such as the addition or deletion of affected units, changes in the throughput or usage rate of affected units or the CO boilers, etc. The only potential change in operating factors of which Valero is currently aware might occur in 2005. Valero may retrofit some of its heaters and boilers with low emitting burners, which would reduce the average emission rate from all heaters and boilers. If this project goes forward, Valero expects that it would need only approximately 300 tons of IERCs per year under its ACP once the retrofit is completed. **Table 2-4** shows Valero's past and estimated future credit needs under its ACP.

2.3.3 DESCRIPTION OF VALERO'S IERCS

In order to produce IERCs for its ACP, Valero voluntarily over-controls NOx emissions from its two CO boilers (S-3 - Crude Preheat Furnace and S-4 - Reduced Crude Preheat Furnace) using its pre-existing thermal deNOx facilities (i.e., aqueous ammonia injection to reduce NOx emissions). This over-control reduces the NOx emission rate from the CO boilers (and the total NOx emissions) to a level lower than that required by BAAQMD Rule 9-10 and lower than Valero's own IERC baseline that is derived from Valero's historical operation of the CO boilers. (During Phase 1, Valero's IERC baseline is lower than the CO boiler emission limits in Rule 9-10).

In order to ensure that it would have an adequate supply of IERCs banked before the July 1, 2000 interim deadline under Rule 9-10, ExxonMobil began reducing NO_x emissions from its CO boilers in order to generate IERCs beginning as early as 1997. ExxonMobil first applied to BAAQMD for IERCs on March 14, 1999.[3] Rule 2-9 allows IERCs to be granted for up to 30 months prior to the date of application for IERCs, so Exxon Mobil's application sought IERCs for three "credit generation periods" (CGPs): 1997 (January 1, 1997 through December 31, 1997), 1998 (January 1, 1998 through December 31, 1998) and 1999 (January 1, 1999 through December 31, 1999).

Under Rule 2-9, the baseline period for determining IERCs is the five-year period preceding the first CGP, so ExxonMobil's application established the refinery's IERC baseline period as the years of 1992 through 1996. BAAQMD calculated Valero's average crude oil throughput during this baseline period to be 127,300 barrels of crude oil per day and calculated Valero's baseline NOx emission rate from the CO boilers to be 0.09915 lb NOx per barrel of crude. To ensure that Valero does not generate credits solely by reducing the amount of heat used to process a barrel of crude, BAAQMD calculated a normalizing ratio for volume of gas used to be 3.01 SDCFM/ bbl/day crude rate (if Valero operates below this level, the quantity of IERCs will be reduced proportionally).

Rule 2-9 provides detailed formulas for calculating the quantity of IERCs earned. In general terms, Valero may generate IERCs equal to its reduction in total emissions if it operates the CO boilers at a lower emission rate than their baseline emission rate. However, Rule 2-9 reduces the quantity of IERCs earned if Valero increases its throughput by the amount of emissions associated with the increased throughput. If Valero decreases its throughput, Valero cannot obtain IERCs for the associated reduction in emissions, even though a reduction in throughput reduces total NOx emissions from the CO boilers.

[3] Application No. 19971. In May 2000, when Valero purchased the refinery from ExxonMobil, it requested that BAAQMD transfer the IERCs (which had by then been approved) and ExxonMobil's ACP application to it as the new owner of the refinery. BAAQMD granted Valero's request.

Valero also cannot obtain IERCs solely by reducing the amount of heat it uses per barrel of crude throughput under the normalizing ratio adjustment established by BAAQMD.

On July 1, 2002, Rule 9-10 will limit NOx emissions from refinery CO boilers to 150 ppm, so Valero's IERC baseline will be reduced in accordance with this regulatory level. After this date, Valero's baseline throughput level will remain 127,300 bbls/day, but its baseline CO boiler emission rate will be 0.05589 lb NOx per barrel of crude oil. Valero's IERC calculations after July 1, 2002, will be based on these new levels.

Under the guidelines provided in Rule 2-9, BAAQMD may issue IERCs only if it determines that Valero's emission reductions are real, enforceable, surplus, and permanent. As described in more detail in BAAQMD's engineering evaluations for Valero's IERCs and ACP, BAAQMD has determined that Valero's operation of the CO boilers below the baseline NOx emission rate described above satisfies these criteria. The BAAQMD's determination was challenged at the BAAQMD's Hearing Board and in Superior Court (the challenges are described in more detail in section 2.4 below.). The Hearing Board and the Superior Court each rejected the challenge and affirmed the District's determination. Therefore, Valero's operation of the CO boilers, below the baseline established by BAAQMD, is considered to represent a real reduction in emissions.

District staff have reviewed the baseline emissions data and concluded that the methodology and the precision were consistent with that used for other credit calculations and compliance determinations by the District. Averaging has been properly used to minimize the potential for error. There was no identified basis for revising the calculations or for making any other adjustments for uncertainty.

Table 2-5 shows the IERCs that Valero has generated so far by voluntarily reducing the NOx emission rate from its CO boilers. Certified IERCs have only a five-year life, so Valero will need to continue to generate IERCs that are certified by BAAQMD in order to comply with Rule 9-10 on an ongoing basis. The actual amount of credits that Valero generates each year will vary depending on a number of operating factors unrelated to the ACP and will be adjusted by Valero as necessary to ensure that adequate credits are available in all future years in light of past credit generation, credit expiration dates, need for credit buffer, credit consumption levels, and other factors. **Table 2-4** summarizes Valero's credit needs and credit generation schedule as currently projected by Valero.

2.4 PRIOR LITIGATION CONCERNING VALERO'S IERCS AND ACP

2.4.1 HEARING BOARD APPEAL OF IERCS

In November 1999, BAAQMD gave public notice of its preliminary decision to issue 211.2 tons of IERCs to ExxonMobil in response to ExxonMobil's application for the 1997 and 1998 CGPs. During the public comment period in December 1999, two environmental groups, Communities for a Better Environment (CBE) and Southeast Alliance for Environmental Justice (SAEJ), submitted written comments urging BAAQMD to reject ExxonMobil's application for the IERCs. On February 1, 2000, BAAQMD approved and issued 172.7 tons of IERCs to ExxonMobil for the 1997 CGP and 38.5 tons for the 1998 CGP.

On February 14, 2000, CBE and SAEJ filed separate appeals with BAAQMD's Hearing Board regarding BAAQMD's February 1, 2000 decision to issue the 1997 and 1998 IERCs to ExxonMobil. The Hearing Board subsequently consolidated the appeals (Docket No. 3304) and held evidentiary hearings on the matter on June 14, 15 and 16, 2000. The consolidated appeal presented four issues: (1) whether BAAQMD erred in applying Rule 2-9 in an illegal "retroactive" manner by issuing IERCs for emission reductions generated in CGPs occurring prior to the adoption of Rule 2-9[4]; (2) whether BAAQMD erred in issuing IERCs for emission reductions that were not "surplus" because those reductions were less than those already required under the 1997 Clean Air Plan and the 1999 SIP[5]; (3) whether BAAQMD erred in the issuance of the IERCs because the IERCs were not "real" due to an alleged failure to account for technical uncertainty in the IERC calculations; and (4) whether BAAQMD failed to comply with the California Environmental Quality Act (CEQA) (Public Resources Code § 21000 *et seq*.) when issuing the IERCs. On June 16, 2000, the Hearing Board ruled against CBE and SAEJ on all four issues.

On June 29, 2000, the Hearing Board entered an Order Denying Appeal on the basis that CBE and SAEJ did not prove by a preponderance of evidence that BAAQMD erred on any of the four issues presented in the appeal. (Appendix C.) In sum, the Hearing Board ruled that BAAQMD did not commit any error in issuing the IERC certificates to ExxonMobil. The Hearing Board sustained BAAQMD's decision on all grounds, finding specifically that: (1) Rule 2-9 allowed for a retroactive application period of 30 months preceding the date of submitting a complete application for IERCs; (2) BAAQMD acted reasonably, fairly and consistently in finding that the emission reductions were "surplus" within the meaning of Rule 2-9; (3) the emissions reductions were "real" because BAAQMD adequately accounted for technical uncertainty in calculating the IERCs; and (4) the issuance of the IERCs was an administrative function, not a discretionary function, making such an action ministerial and therefore exempt from CEQA review. As discussed further in section 2.4.2 below, CBE and SAEJ sought review of the Hearing Board's ruling in the Superior Court, but the Superior Court upheld the Hearing Board's decision.

On July 3, 2000, the District issued 130.9 tons of additional IERCs to Valero under Application No. 19971 for the 1999 CGP. On July 13, 2000, CBE and SAEJ filed another Hearing Board appeal (Docket No. 3320), challenging the issuance of the 1999 IERCs on the same four grounds raised previously in Docket No. 3304 and rejected by the Hearing Board in its June 2000 decision and Order Denying Appeal. This appeal was eventually abandoned and withdrawn by CBE and SAEJ, and dismissed by the Hearing Board on October 1, 2001, after the conclusion of the lawsuit described below in Section 2.4.2.

2.4.2 BAAQMD'S APPROVAL OF VALERO'S ACP BASED ON A NEGATIVE DECLARATION AND SUBSEQUENT SUPERIOR COURT PETITION RELATED TO THE IERCS AND ACP

On May 23, 2000, BAAQMD circulated for review a draft negative declaration analyzing the environmental impacts of the proposed ACP and concluding that implementation of the ACP would not

[4] On June 16, 2000, the Attorney General of the State of California submitted an amicus brief urging the Hearing Board to rescind BAAQMD's approval of Valero's IERCs based on the retroactive application of Rule 2-9.

[5] Rule 2-9 requires that any emissions reductions for which a facility claims credits must be "surplus," which is defined as a reduction "which exceeds the emission reductions . . . assumed . . . by the most recent District approved Clean Air Plan or Air Quality Management Plan". Rules 2-9-212 and 2-9-218.

result in significant environmental effects. In a letter dated June 22, 2000, submitted during the public comment period for the proposed ACP and negative declaration, both CBE and SAEJ filed comments urging BAAQMD to reject Valero's proposed ACP. On June 30, 2000, BAAQMD approved Valero's proposed ACP, thereby allowing Valero to use the 1997 and 1998 IERCs in lieu of meeting the BARCT requirements of Rule 9-10. In conjunction with this approval, BAAQMD determined that the ACP would not cause a significant environmental impact. Accordingly, BAAQMD adopted a negative declaration under CEQA. The validity of the ACP approval and BAAQMD's reliance on the negative declaration were not before the Hearing Board in Docket No. 3304 because the ACP approval took place after Docket No. 3304 was decided. Moreover, there is no provision in BAAQMD rules and regulations that allows approval of an ACP to be appealed to the Hearing Board.

On July 28, 2000, CBE and SAEJ filed a Petition for Writ of Mandamus in San Francisco Superior Court, challenging the Hearing Board's June 29, 2000 order affirming BAAQMD's issuance to ExxonMobil/Valero of IERCs for CGPs 1997 and 1998 and BAAQMD's approval on June 30, 2000 of the Valero ACP for compliance with Rule 9-10. Specifically, the Petition sought: (1) a writ of mandate requiring BAAQMD to rescind its issuance of IERCs for the 1997 and 1998 credit generation periods; (2) a writ of mandate requiring BAAQMD to withdraw approval of the "Valero Pollution Credit Project" and prepare an EIR for the project; and, (3) for an injunction prohibiting BAAQMD and Valero from using IERCs until the BAAQMD complies with CEQA.

The Petition asserted seven causes of action: (1) failure of BAAQMD to apply CEQA to IERC issuance; (2) impermissible adoption of a CEQA negative declaration for the ACP because a fair argument existed that the use of the IERCs may cause a significant adverse environmental impact; (3) violation of CEQA by not allowing CBE and SAEJ to appeal the adoption of a CEQA negative declaration for approval of the ACP to BAAQMD's Board of Directors; (4) violation of CEQA for improper "piecemealing" the environmental review of the IERCs from the ACP; (5) illegal "retroactivity" of IERC issuance; (6) illegality of IERCs for reductions that were not "surplus"; and, (7) illegality of IERCs for failure to consider "technical uncertainty" in IERC calculations.

On March 1, 2001, Judge David A. Garcia of the San Francisco Superior Court entered an "Order Granting, In Part, and Denying, In Part, Petitioners' Request for Writ of Mandamus and Injunctive Relief." The Superior Court granted CBE's and SAEJ's claim for relief based upon its second cause of action but denied the other six causes of action. The Court upheld the validity of Valero's IERCs and did not enjoin Valero from using them in an ACP. The Court did, however, issue a writ of mandate requiring BAAQMD to retract its approval of Valero's ACP until BAAQMD certifies an EIR relating to the use of the 1997 and 1998 IERCs. A copy of the Court's order is attached at Appendix E.

Neither CBE nor SAEJ appealed the Court's Order, and it is therefore final. As a result of the Court's ruling, BAAQMD is preparing this EIR in connection with consideration of both phases of Valero's ACP, i.e., the ACP submitted in 2000 to comply with Rule 9-10's July 1, 2000 deadline, and the revised ACP submitted in 2001 to comply with Rule 9-10's July 1, 2002 deadline, including all amendments to these ACP applications that have been submitted by Valero.

2.4.3 AGREEMENT BETWEEN VALERO AND THE ATTORNEY GENERAL

On December 20, 2000, Valero entered into an agreement with the California Attorney General's office under which Valero will retire banked NOx IERCs without using them in an ACP. The IERCs will be retired on the following schedule: 100 tons by July 1, 2002; 100 tons by July 1, 2004; and 50 tons by July 1, 2005. To implement that agreement, Valero has instructed BAAQMD to retire 100 tons of IERCs that were generated during the 1997 CGP.

FIGURE 2-1
REFINERY LOCATION

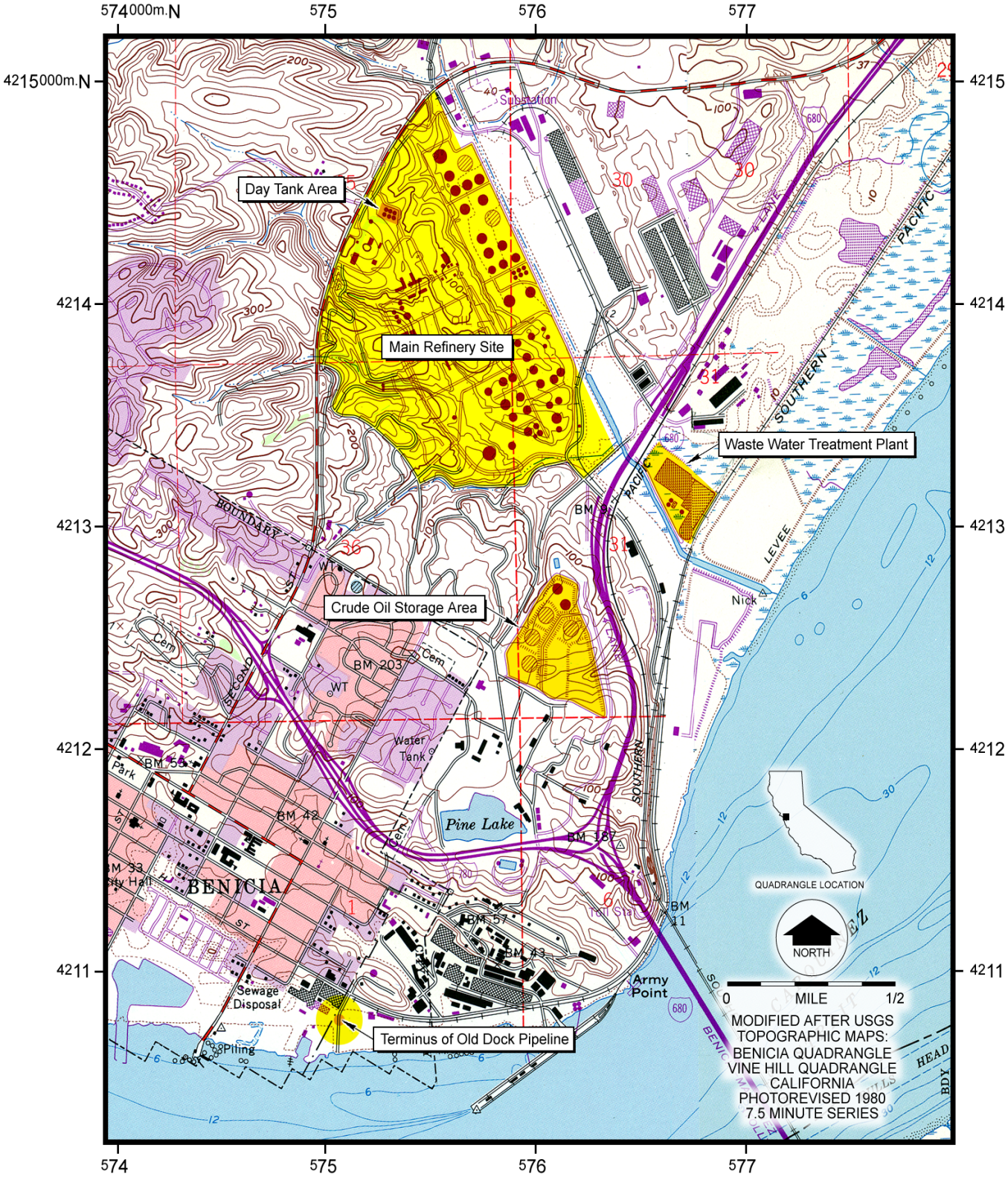

FIGURE 2-2
SITE PLAN OF THE REFINERY SHOWING LOCATIONS OF AFFECTED UNITS

[To be provided]

TABLE 2-1
DESCRIPTION OF "AFFECTED UNITS" UNDER RULE 9-10-301*

F-103 – Jet Hydrofiner Hydrogen Preheat Furnace. Preheats the recycled treat gas and make up treat gas prior to it mixing with the jet fuel and entering the jet hydrofiner.

F-104 - Naphtha Feed Preheat. Preheats the feed to fully vaporize the remaining liquid prior to entering the naphtha hydrofiner.

F-301 and F-351 – Stream Methane Reforming Furnaces. Used to react stream with hydrocarbon to produce hydrogen.

F-401 – HCU Recycle Gas Furnace. Preheats recycle treat gas prior to entering the hydrocracker reactor.

F-601 – Cat Feed Hydrofiner Treat Gas Furnace. Preheats the treat gas prior to mixing with liquid feed to the reactor.

F-701 – FCCU Preheat Furnace. Preheats feed prior to entering the fluid cat cracking unit reactor.

F-801 – Cat Naphtha Hydrofiner Furnace. Preheats feed prior to entering the reactor. Furnace duty is a function of catalyst activity. The furnace-firing rate is adjusted to maintain a required reactor temperature.

F-902 – Coker Steam Superheater Furnace. Superheats the 150-psig steam used in the fluid coking process.

F-2901-4 – Powerformer Furnaces. Preheat feed prior to entering each reforming reactor. The four furnace boxes share a common emissions stack.

F-2905 – Powerformer Regeneration Furnace. Heats the regeneration gas prior to sending it through the regenerating reactor.

F-2906 – Powerformer Reactivation Furnace. Heats tail gas from the Absorber/Stripper tower overhead and sends it through the reactivating drier. The tail gas removes moisture from the drier desiccant.

F-4460 – Hot Oil Furnace. Heats oil, which is the heating medium for several heat exchangers in the Motor Gasoline Reformulation Unit.

H-1 – Crude Furnace. Heats crude oil prior to fractionation at the asphalt plant.

H-2A and H-2B – Small Boilers. Produce utility steam for use in the asphalt plant.

SG-703 – Utility Boiler. Produces steam for refinery process (fired on refinery fuel gas).

SG-2301 and SG-2302 – Utility Boilers. Produce steam for refinery processes (fired on refinery fuel gas).

(*) Only units F-301, F-351, SG-2301, and F-4460 are subject to the interim limit applicable to 50% of the total heat input capacity (i.e., Phase 1).

TABLE 2-2
QUARTERLY CREDIT USAGE

Quarter	**IERCs Used During Quarter** *tons*
3Q 2000	13.09
4Q 2000	13.43
1Q 2001	13.01
2Q 2002	11.81
3Q 2001	11.27
4Q 2001	7.75
1Q 2002	3.71
2Q 2002	4.00
Total IERCs Used To Date	***78.07***

TABLE 2-3
TYPICAL CALCULATION OF HEATER AND BOILER EMISSIONS

Source	Description	Maximum Rated Capacity *mmBTU/hr*	Typical Firing Rate* *mmBTU/hr*	Existing Control Equipment	NOx Emission Factor *lb/mmBTU*	Typical NOx Emissions *lb/day*
F-103	Jet Hydrofiner Hydrogen Preheat Furnace	53	25	None	0.184	110.40
F-104	Naphtha Feed Preheat	62	38	None	0.155	141.36
F-301	Stream Methane Reforming Furnace	614	514	LNB	0.047	579.79
F-351	Stream Methane Reforming Furnace	614	460	LNB	0.048	529.92
F-401	HCU Recycle Gas Furnace	200	170	LNB/TDN	0.040	163.2
F-601	Cat Feed Hydrofiner Treat Gas Furnace	33	22	None	0.282	148.90
F-701	FCCU Preheat Furnace	230	205	None	0.133	654.36
F-801	Cat Naphtha Hydrofiner Furnace	33	12	None	0.155	44.64
F-902	Coker Steam Superheater Furnace	20	12	LNB	0.049	14.11
F-2901-4	Powerformer Furnaces	463	356	None	0.141	1204.70
F-2905	Powerformer Regeneration Furnace	74	9	None	0.146	31.54
F-2906	Powerformer Reactivation Furnace	14	2	None	0.146	7.01
F-4460	Hot Oil Furnace	351	259	SCR	0.008	49.73
H-1	Crude Furnace	33	30	LNB	.033	23.760
H-2A	Small Boiler	15	10	LNB	.033	7.92
H-2B	Small Boiler	15	10	LNB	.033	7.92
SG-2301	Utility Boiler	218	81	LNB/FGR	0.029	56.38
SG 2302	Utility Boiler	218	83	None	0.148	294.82
Typical Actual NOx Emissions		***3260***	***2298***		***.074***	***4070.46***
Typical Allowable NOx Emissions			***2298***		***.033***	***1820.02***

(*) This is only a typical calculation. Although usage and emissions from these units are not expected to change as a result of the ACP, actual usage of the affected units and emissions from the affected units could go up or down depending on other operating factors unrelated to the ACP, including, for example, adding or removing affected units, changes in throughput of affected units, installation of additional controls on affected units, etc.
(**) This table does not include emissions from SG-703, which is scheduled to be shut down sometime in the next six months, because this table is intended to calculate long-term "typical" IERC use rather than actual use at any particular point in time.

TABLE 2-4
SUMMARY OF PROJECTED IERC GENERATION AND USE

Year	IERCs Generated	IERCs Used	IERCs Retired or expired	IERC Balance
1992-1996	n/a	n/a		n/a
1997	172.7	n/a		172.7
1998	38.5	n/a		211.2
1999	130.9	n/a		342.1
2000	554.1	26.52		869.68
2001	1284.2	43.84		2110.04
2002	800	500	100*	2310
2003	330	500		2140
2004	330	500	100*	1870
2005	330	330	50*	1820
2006	330	330		1820
2007	330	330	170**	1650
2008 and later	330	330		Varies (~1650)

Data from 1992 through 2001 is based on actual operating history. Data from 2002 and later is based on Valero's current operating projections. Actual credit generation will be adjusted by Valero as necessary to ensure that adequate credits are available in all future years in light of past credit generation, credit expiration dates, need to maintain a credit buffer, credit use levels, and other factors.

*Credits retired pursuant to agreement with Attorney General.
**Unused credits expire five years after end of generating period.

TABLE 2-5
IERCs GENERATED BY VALERO

Year (Credit Generation Period)	**Crude Oil Throughput** ***bbls/day***	**CO boiler NOx Emission Rate** ***lb NOx/bbl***	**IERCs Generated** ***tons***
Baseline: 1992-1996	127,300	0.09915	n/a
1997	120,400	0.09135	172.7
1998	129,600	0.09302	38.5
1999	113,800	0.08663	130.9
2000	130,080	0.07349	554.1
2001	128,080	0.04361	1284.2
Total IERCs Generated to Date			***2180.4***

CHAPTER 3
ENVIRONMENTAL ANALYSIS

The Initial Study prepared for Valero's ACP (attached at Appendix F) identified no potentially significant impacts to environmental factors other than air quality. Therefore, pursuant to section 15128 of the State CEQA Guidelines, 14 Cal. Code Reg. § 15128, the following environmental analysis discusses only potential impacts on air quality.

3.1 ENVIRONMENTAL SETTING

Air quality is a function of both the rate and location of pollutant emissions under the influence of meteorological conditions and topographic features that influence pollutant movement dispersal. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants, and consequently affect air quality. This setting description provides an overview of region-specific information related to climate and topography; regulatory context followed by a discussion of plans, policies, and regulations; and existing air quality conditions pertaining to the refinery area.

3.1.1 CLIMATE AND METEOROLOGY

Valero's refinery is located in the City of Benicia within the San Francisco Bay Area (Bay Area) Air Basin. The Bay Area Air Basin encompasses the nine-county region including all of Alameda, Contra Costa, Santa Clara, San Francisco, San Mateo, Marin and Napa Counties, and the southern portions of Solano and Sonoma Counties. The climate of the greater Bay Area, including Benicia, is a Mediterranean-type climate characterized by warm, dry summers and mild, wet winters. The climate is determined largely by a high-pressure system that is almost always present over the eastern Pacific Ocean off the West Coast of North America. High-pressure systems are characterized by an upper layer of dry air that warms as it descends, restricting the mobility of cooler marine-influenced air near the ground surface, and resulting in the formation of subsidence inversions. In winter, the Pacific high-pressure system shifts southward, allowing storms to pass through the region. During summer and fall, emissions generated within the Bay Area can combine with abundant sunshine under the restraining influences of topography and subsidence inversions to create conditions that are conducive to the formation of photochemical pollutants, such as ozone, and secondary particulates, such as sulfates and nitrates.

Specifically, the refinery is located in the Carquinez Strait climatological subregion of the Bay Area. The Carquinez Strait is the only sea-level gap between San Francisco Bay and the Central Valley. Wind flow patterns are controlled by air circulation in the atmosphere, which is affected by air pressure and the variable topography of the coastal areas adjacent to the Carquinez Strait. Prevailing winds in the area of the refinery are from the west through the Carquinez Strait.

During the summer and fall months, high pressure offshore coupled with low pressure in the Central Valley causes marine air to flow eastward through the Carquinez Strait. Annual average wind speeds in the area are approximately 8 miles per hour, and 9 to 10 miles per hour further east (BAAQMD 1999). Sometimes atmospheric conditions cause air to flow from the east. East winds usually contain more pollutants than the cleaner marine air from the west. In the summer and fall months, this can cause elevated pollutant levels to move into the central Bay Area through the Strait. These high-pressure periods are usually accompanied by low wind speeds, shallow mixing depths, higher temperatures, and little or no rainfall.

Temperature fluctuations in Benicia are small because of the strong marine influence on the climate. Temperatures are generally milder near the water, and the daily annual temperature range is small. On certain occasions, offshore continental airflow can bring more extreme variations in temperature. The annual average temperature is estimated at 60 degrees Fahrenheit (°F), ranging from an estimated winter average of 48°F to an estimated summer average of 73°F. The area experiences numerous summer days with temperatures over 90°F.

3.1.2 REGULATORY CONTEXT

CRITERIA AIR POLLUTANTS

Regulation of air pollution is achieved through both national and state ambient air quality standards and emission limits for individual sources of air pollutants. As required by the federal Clean Air Act, the U.S. Environmental Protection Agency (U.S. EPA) has identified criteria pollutants and established National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. NAAQS have been established for ozone, CO, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM-10), and lead. These pollutants are called criteria air pollutants because standards have been established for each of them to meet specific public health and welfare criteria. California has adopted more stringent ambient air quality standards for most of the criteria air pollutants (referred to as State Ambient Air Quality Standards or SAAQS). **Table 3-1** lists both sets of ambient air quality standards (i.e., national and state) and provides a brief discussion of the related health effects and principal sources for each pollutant. As required by the federal Clean Air Act and the California Clean Air Act, air basins or portions thereof have been classified as either "attainment" or "nonattainment" for each criteria air pollutant, based on whether or not the standards have been achieved. Nonattainment areas are also required to prepare air quality plans that include strategies for achieving attainment. Air quality plans developed to meet federal requirements are referred to as State Implementation Plans (SIPs).

REGULATORY AGENCIES

U.S. EPA is responsible for implementing the myriad of programs established under the federal Clean Air Act, such as establishing and reviewing the NAAQS and judging the adequacy of SIPs, but has delegated the authority to implement many of the federal programs to the states while retaining an oversight role to ensure that the programs continue to be implemented.

CARB is responsible for establishing and reviewing the SAAQS, compiling the California SIP and securing approval of that plan from U.S. EPA, and identifying toxic air contaminants. CARB

also regulates mobile sources of emissions in California, such as construction equipment, trucks, and automobiles, and oversees the activities of air quality districts, which are organized at the county or regional level. The local air districts are primarily responsible for regulating stationary emissions sources at industrial and commercial facilities within their geographic areas and for preparing the air quality plans that are required under the federal Clean Air Act and California Clean Air Act. These regional air quality plans prepared by local air districts throughout the state are compiled by CARB to form the SIP. Local air districts also have responsibility and authority to adopt transportation control and emission reduction programs for indirect and area-wide emission sources. BAAQMD is the regional agency with jurisdiction over the nine-county region located in the Bay Area Air Basin. Local councils of governments, county transportation agencies, cities and counties, and various non-governmental organizations also join in the efforts to improve air quality through a variety of programs. These programs include the adoption of regulations and policies, as well as implementation of extensive education and public outreach programs.

AIR QUALITY PLANS, POLICIES AND REGULATIONS

Plans and Policies

The refinery is located in the Bay Area Air Basin portion of Solano County, which is currently designated "nonattainment" for state and national ozone standards and for the state PM-10 standard (CARB 2000). Urbanized parts of the Bay Area, including the site, are also designated as "maintenance" areas for the national CO standard. The "maintenance" designation denotes that the area, now "attainment," had once been designated as "nonattainment." The Bay Area is "attainment" or "unclassified" with respect to the other ambient air quality standards. **Table 3-2** shows the attainment status of the Bay Area with respect to the federal and state ambient air quality standards for different criteria pollutants.

As noted earlier, the federal Clean Air Act and the California Clean Air Act require plans to be developed for areas designated as nonattainment (with the exception of areas designated as nonattainment for the state PM-10 standard). Plans are also required under federal law for areas designated as "maintenance" for national standards. Such plans are to include strategies for attaining the standards. Currently, there are three plans for the Bay Area:

- Ozone Attainment Plan for the 1-Hour National Ozone Standard (Association of Bay Area Governments (ABAG), 1999), developed to meet federal ozone air quality planning requirements;

- Bay Area 2000 Clean Air Plan (BAAQMD, 2000a), the most recent triennial update of the *1991 Clean Air Plan* developed to meet planning requirements related to the state ozone standard; and

- Carbon Monoxide Maintenance Plan (ABAG, 1994), developed to ensure continued attainment of the national carbon monoxide standard.

BAAQMD, the Metropolitan Transportation Commission, and ABAG have prepared a Bay Area 2001 Ozone Attainment Plan. This plan is a proposed revision to the Bay Area part of

California's plan to achieve the national ozone standard. The plan is in response to U.S. EPA's partial approval and partial disapproval of the Bay Area's 1999 Ozone Attainment Plan and finding of failure to attain the NAAQS for ozone. The revised plan was adopted by the boards of the co-lead agencies at a public meeting on October 24, 2001, but is awaiting approval from U.S. EPA. This plan amends and supplements the 1999 Plan and demonstrates attainment of the national ozone standard by 2006.

Rules and Regulations

The regional agency primarily responsible for developing air quality plans for Solano County is BAAQMD, the agency with permit authority over most types of stationary emission sources in the Bay Area. BAAQMD exercises permit authority through its rules and regulations. Both federal and state ozone plans rely heavily upon stationary source control measures set forth in BAAQMD's rules and regulations. In contrast to the ozone plans, the CO Maintenance Plan relies heavily on mobile source control measures.

Sources at refineries are subject to a number of rules and regulations. The subject of this project is compliance of the affected sources at Valero's refinery with the requirements of Rule 9-10, which regulates NOx emissions from refinery boilers, steam generators and process heaters. The other rule relevant to the proposed ACP is Rule 2-9, which regulates use of IERCs from stationary sources of NOx. Chapter 2.2, Description of Rule 9-10 and Rule 2-9, of this EIR provides details of the regulatory history of these two regulations.

City of Benicia General Plan

The City of Benicia General Plan contains the following goals, policies and programs with respect to air quality:

Goal 4.9: Ensure clean air for Benicia residents.

Policy 4.9.1: Establish whether a significant air pollution problem exists in Benicia and the City's role in resolving it.

Program 4.9A: Prepare a review of existing air quality information and data sources, the quality and extent of this data, and existing regulatory requirements.

Program 4.9B: Consult with the staff of the BAAQMD and prepare recommendations for actions that the City will take to reduce identified air quality problems toward meeting ambient air quality standards.

Goal 4.10: Support improved regional air quality.

Policy 4.10.1: Support implementation of Bay Area Clean Air Plan.

The Bay Area Clean Air Plan provides a strategy for attaining all the air quality standards in the nine-county Bay Area Quality Management District. Benicia would demonstrate

consistency with the Bay Area Clean Air Plan by implementing Transportation Control Measures (TCMs) including expanding employer assistance programs, improving bicycle access and facilities, improving arterial traffic management, establishing transit use incentives, and adopting a local clean air plan, policies, and programs.

Program 4.10A:	Coordinate air quality planning efforts with other local, regional, and State agencies.
Program 4.10B:	Require that projects with identified significant air quality impacts include all feasible mitigation measures needed to reduce impacts to less than significant levels.
Policy 4.10.2:	Encourage designs and land use strategies that reduce automobile use and promote mixed use, jobs/housing balance, telecommuting, bicycle, and pedestrian facilities, and transit.

EXISTING AIR QUALITY

BAAQMD operates a regional monitoring network that measures the ambient concentrations of the six criteria pollutants. Existing and probable future levels of air quality in the refinery area can generally be inferred from ambient air quality measurements conducted by BAAQMD at its monitoring stations. The major pollutants of concern in the San Francisco Bay Area, ozone, CO, and particulate matter, are monitored at a number of locations. There are no monitoring stations in Benicia; the monitoring station closest to the site that measures criteria pollutants is the Tuolumne Street station in Vallejo. The Tuolumne Street station is located about 6 miles northwest of the Valero refinery and monitors ozone, CO and PM-10. **Table 3-3** shows a five-year summary of monitoring data collected from this station. **Table 3-3** also compares measured pollutant concentrations with state and national ambient air quality standards.

OZONE

Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and that can cause substantial damage to vegetation and other materials. Ozone is not emitted directly into the atmosphere, but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and NOx. ROG and NOx are precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours. Ozone is a regional air pollutant because it is not emitted directly by sources, but is formed downwind of sources of ROG and NOx under the influence of wind and sunlight. Ozone concentrations tend to be higher in the late spring, summer, and fall, when long sunny days combine with regional subsidence inversions to create conditions conducive to the formation and accumulation of secondary photochemical compounds, like ozone.

Based on the data shown in **Table 3-3**, exceedances of the state ozone standard in the refinery vicinity have occurred on an average of approximately less than two days per year at the Tuolumne Street station in Vallejo with no exceedances for the past two years. There have been

no exceedances of the national one-hour ozone standard, but the station has recorded occasional exceedances of the national eight-hour ozone standard. In 2000, CARB inventory data show that average daily emissions of the principal ozone precursors, ROG and NOx, from all anthropogenic (non-natural) sources in Solano County were estimated at 51 and 48 tons respectively, with on- and off-road mobile sources making up about 60% of ROG and 79% of NOx emissions.

CARBON MONOXIDE

CO is a non-reactive pollutant that is a product of incomplete combustion and is mostly associated with motor vehicle traffic. High CO concentrations develop primarily during winter when periods of light winds combine with the formation of ground level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease or anemia.

There have been no exceedances of state and national ambient CO standards in the refinery vicinity over the last five years. CARB inventory data indicate that average daily anthropogenic CO emissions in Solano County were estimated at 254 tons per day in 2000, with on-road motor vehicles contributing approximately 77% of that total. Residential fuel combustion, utilities and manufacturing contributed the remainder.

PARTICULATE MATTER

PM-10 and PM-2.5 consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively. (A micron is one-millionth of a meter). PM-10 and PM-2.5 represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects. Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of particulate matter, such as demolition and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates also can damage materials and reduce visibility.

PM-10 emissions in the refinery area are mainly from urban sources, dust suspended by vehicle traffic and secondary aerosols formed by reactions in the atmosphere. Particulate concentrations near residential sources generally are higher during the winter, when more fireplaces are in use and meteorological conditions prevent the dispersion of directly-emitted contaminants. In 2000, CARB inventory data show that average daily anthropogenic emissions of PM-10 in Solano County were estimated at 23 tons per day. Of this, about 45% came from road dust, 6% from residential fuel combustion (such as wood-burning stoves and fireplaces) and 15% from construction, demolition and waste burning.

OTHER CRITERIA POLLUTANTS

The standards for NO_2, SO_2 and lead are being met in the refinery area, and the latest pollutant trends suggest that these standards will not be exceeded in the foreseeable future. Ambient levels of airborne lead are well below the state and federal standard and are expected to continue to decline. Because no sources of lead emissions exist on the refinery site or are proposed by the project, lead emissions are not further evaluated in this analysis.

TOXIC AIR CONTAMINANTS

Toxic air contaminants are pollutants that are associated with acute, chronic, or carcinogenic effects but for which no ambient air quality standard has been established or, in the case of carcinogens, is appropriate. The ambient background of toxic air contaminants is the combined result of many diverse human activities, including gasoline stations, automobiles, dry cleaners, industrial operations, hospital sterilizers, and painting operations. In general, mobile sources contribute more significantly to health risks than do stationary sources (BAAQMD, 2000b). BAAQMD operates a network of monitoring stations that measure ambient concentrations of certain toxic air contaminants that are associated with strong health-related effects and are present in appreciable concentrations in the Bay Area, as in all urban areas. BAAQMD estimates that the average lifetime cancer risk from toxic air contaminants in the ambient air in the Bay Area (based on ambient air quality monitoring data for 1999) is 186 cases of cancer per million residents (down from 303 in one million based on 1995 data). Of the pollutants for which monitoring data are available, benzene and 1,3-butadiene (which are emitted primarily from motor vehicles) account for over one-half of the average calculated cancer risk (BAAQMD, 2000b). Benzene levels have declined dramatically since 1996 with the advent of Phase 2 reformulated gasoline. The use of reformulated gasoline also appears to have led to significant decreases in 1,3-butadiene.

SENSITIVE RECEPTORS

Some receptors are considered more sensitive than others to air pollutants. The reasons for greater than average sensitivity include pre-existing health problems, proximity to emissions sources, or duration of exposure to air pollutants. Schools, hospitals and convalescent homes are considered to be relatively sensitive to poor air quality because children, elderly people and the infirm are more susceptible to respiratory distress and other air quality-related health problems than the general public. Residential areas are considered sensitive to poor air quality because people usually stay home for extended periods of time, with associated greater exposure to ambient air quality. Recreational uses are also considered sensitive due to the greater exposure to ambient air quality conditions because vigorous exercise associated with recreation places a high demand on the human respiratory system.

3.2 SIGNIFICANCE THRESHOLDS

For project-level impact analysis, BAAQMD has established specific quantitative thresholds to define if a project has the potential to cause a significant air quality impact. (BAAQMD, 1999) Under BAAQMD's CEQA guidelines, a net increase of 80 pounds per day of ROG, NO_x or PM-

10 would be considered significant. Also, an increase of 550 pounds per day of CO would be considered significant if it leads to a possible local violation of the ambient CO standards (i.e., if it creates a "hot spot"). For projects that would not cause a significant increase of ROG, NOx, or PM-10 emissions, the cumulative effect is evaluated based on a determination of the consistency of the project with the regional Clean Air Plan.

BAAQMD has additional specific guidelines related to emission of toxic air contaminants and odor, but these guidelines are not relevant to this EIR because there is no indication that the project will increase emissions of toxic air contaminants or will increase odors.

3.3 ANALYSIS OF ENVIRONMENTAL IMPACTS

3.3.1 ANALYSIS OF IMPACTS ON AIR QUALITY

Valero's project will not have a significant impact on air quality because it will not cause an increase in NOx emissions. The sole purpose of Valero's project is to reduce NOx emissions from its CO boilers in order to comply with District Rule 9-10. Rule 9-10 limits emissions from certain heaters and boilers at Valero's refinery to 0.033 lb NOx/mmBTU (effective July 1, 2000 for 50% of the heating capacity of the affected heaters and boilers, and July 1, 2002 for 100% of the affected heaters and boilers). There are two ways for Valero to comply with this emission limit. It can either reduce emissions from the heaters and boilers subject to the limit, or, in the alternative, it can generate and use IERCs by reducing emissions elsewhere at its Benicia refinery. Both compliance alternatives require Valero to engage in some physical activity to reduce NOx emissions.

For purposes of the District's CEQA evaluation, there is no conceivable way that Valero's emission reduction project can "cause" an increase in emissions. Under CEQA, the term "project" means "the whole of an action, which has the potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment."[6] Valero's project consists of the physical activity that Valero engages in that affects the environment, and does not mean each separate government approval.[7] Thus, for purposes of this EIR, Valero's project is 1) the operation of its thermal deNOx system to reduce the emission rate of the CO boilers below the applicable regulatory limit and below Valero's IERC baseline emission rate in order to generate IERCs [8]; and 2) the use of the IERCs so generated in the ACP. As shown in **Table 3-4**, Valero's project has already had a beneficial effect on the environment by reducing NOx emissions.

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[6] CEQA Guidelines § 15378(a).

[7] See, e.g., Committee for a Progressive Gilroy v. State Water Resources Control Board, 192 Cal. App. 3d 847, 863 (1987).

[8] Arguably, this EIR does not need to analyze changes in NOx emissions at the CO boilers as an impact of the approval of the ACP because both the District's Hearing Board and the Superior Court have already determined that issuance of IERCs is not subject to CEQA. However, for completeness sake, BAAQMD is including the generation of IERCs in this analysis.

Valero intends to continue to use an ACP on an ongoing basis to comply with Rule 9-10. Since IERCs have only a five-year life, Valero will need to generate NOx reductions below the regulatory limit (and below its IERC baseline) on an ongoing basis as long as it continues to implement its ACP. There is no physical activity that Valero plans to engage in as part of the ACP or for which Valero is seeking approval that can cause an increase in NO_X emissions.

Valero's ACP has no effect on the emissions from heaters and boilers that are subject to Rule 9-10's 0.033 lb/mmBTU limit, since Valero is not proposing to undertake any physical activity at those units as a result of the ACP. BAAQMD recognizes that Valero will be operating the units listed in **Table 2-1** and that those units will continue to emit NOx. However, the ACP will not affect the operation of the units and the emission level from those units.

Valero's ACP also will not cause a change in the throughput of the CO boilers, either up or down because IERCs can be generated only by reducing the NO_X emission rate from the CO boilers. In fact, an increase in throughput would decrease Valero's IERCs, and would require Valero to reduce the emission rate from the CO boilers in order to generate an equivalent number of IERCs. Thus, the only effect of the project is to cause Valero to over-control NOx emissions from the CO boilers in order to generate IERCs.

In addition, in order to qualify for IERCs, Valero's emission reductions at its CO boilers must be real, surplus, enforceable and quantifiable within the meaning of Rule 2-9. These requirements, especially the requirement that Valero's reductions be "real," ensure that the emission reductions generated for use in Valero's ACP have a beneficial impact on the environment. The Hearing Board determined that Valero's NO_X emissions were real and the Superior Court upheld that determination.

In order to sustain its ACP, Valero must continue to operate its CO boilers with a reduced average NOx emission rate. This reduction in the NOx emission rate has a beneficial impact on air quality.

3.3.2 RESPONSE TO COMMENTS ON NOTICE OF PREPARATION

COMPARISON TO "NO PROJECT ALTERNATIVE" IS NOT APPROPRIATE FOR DETERMINING WHETHER THE PROPOSED PROJECT WILL HAVE SIGNIFICANT IMPACTS

BAAQMD received comments on its Notice of Preparation ("NOP") for this EIR from SAEJ, suggesting that BAAQMD should assess whether Valero's ACP may have potentially significant impacts by comparing future NOx emissions under Valero's proposed ACP to future NOx emissions if Valero were to install controls on affected heaters and boilers in lieu of implementing an ACP. (See Appendix G.) SAEJ also suggested that such an approach would lead BAAQMD to conclude that Valero's project will have a significant impact on the environment. BAAQMD disagrees with both assertions.

First, in determining whether significant impacts will occur, it is inappropriate to compare Valero's ACP to the hypothetical world that would exist if Valero were not implementing an

ACP. As described above, there are two ways to comply with Rule 9-10. Where there are two ways to comply with a rule, CEQA does not require that BAAQMD compare the two compliance alternatives to one another to determine whether the impact of the selected alternative is significant. CEQA requires that BAAQMD compare the project applicant's selected compliance alternative to the environment as it exists before the project, i.e., the selected compliance alternative, is implemented. The purpose of CEQA is to determine whether the physical activity, which is being approved by an agency, will have an adverse effect on the environment as it exists before the proposed project is implemented.

BAAQMD, of course, agrees with SAEJ's assertion that if Valero does not implement an ACP, it would be required to install control equipment on its heaters and boilers in order to comply with Rule 9-10. In CEQA terms, this alternative means of complying is the equivalent of the "no project alternative," since it represents what would happen if Valero's project, i.e., its ACP, were not implemented.[9] CEQA makes clear that the CEQA "baseline" for assessing impacts of a proposed project is different from the "no project alternative" that represents conditions that would occur in the future without the project. CEQA states:

> "The specific alternative of 'no project' shall also be evaluated along with its impact. The purpose of describing and analyzing a no project alternative is to allow decision makers to compare the impact of approving the proposed project with the impacts of not approving the proposed project. The no project alternative analysis is not the baseline for determining whether the proposed projects environmental impacts may be significant, unless it is identical to the existing environmental setting analysis which does establish that baseline."[10]

Valero has not installed controls on its heaters and boilers to achieve the 0.033 lb/mmBTU limit. Therefore, this scenario cannot represent the baseline for determining whether Valero's project will have a significant effect on the environment.

Second, although not required as part of its analysis of the environmental impacts of Valero's project, Chapter 4 of this EIR analyzes the comparison suggested by SAEJ in the context of project alternatives. The analysis in Chapter 4 concludes that Valero's ACP reduces NOx emissions by a greater amount and sooner than the alternative of directly controlling all heaters and boilers. Therefore, even if BAAQMD were to use the baseline suggested by SAEJ, it would conclude that the ACP has a beneficial impact on air quality.

THE BASELINE PERIOD FOR ASSESSING THE IMPACTS OF THE PROJECT SHOULD BE THE 1992 TO 1996 PERIOD USED FOR THE IERC BASELINE

SAEJ's comment on the NOP also suggested that the CEQA "baseline" described in the NOP and Initial Study (see Appendix F) was unclear. As discussed, Valero's project cannot cause an emissions increase, and therefore it will not have a significant impact on air quality.

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[9] See CEQA Guidelines § 15126.6(e)(3)(B) (stating that when disapproval of one project leads to proposal of some other project, that other project is the "no project" consequence).

[10] CEQA Guidelines § 15126.6(e)(1) (emphasis added)

Notwithstanding this, the most appropriate baseline period for determining whether Valero's project has a significant effect on the environment is a baseline period before Valero implemented the project, i.e., before 1997. The primary purpose of an EIR is to "identify the significant effects on the environment of a project."[11] As discussed above, Valero's project consists of the physical activity that Valero engages in. Selecting a baseline that is any time in or after 1997 would select a period in the middle of the project, which would not properly identify the effects of the project on the environment.

An EIR "must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced."[12] In general, this "environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant."[13] However, the word "normally" in this Guideline provision means that BAAQMD must consider something other than the conditions at the time of the NOP as the baseline in an appropriate case.[14] In this case, due to administrative and litigation delays and the retroactive application of IERCs under Rule 2-9 (upheld by the Superior Court), the project is already in progress. Thus, it is appropriate to set the baseline at the commencement of the project, (or, at the latest, at the commencement of the environmental review process).

BAAQMD's CEQA analysis of Valero's ACP has not followed the path "normally" followed in a CEQA evaluation, so there is ample reason to use a baseline date other than the NOP date that is "normally" used under CEQA. In this case, both the project and the environmental review of the project began well before the NOP date. BAAQMD knew by no later than late 1996 that the refinery (then owned by Exxon, Valero's predecessor in interest) was planning to comply with Rule 9-10 by reducing emissions to generate IERCs because the refinery submitted status reports as required by Rule 9-10 that described its plan. The refinery actually began reducing NOx emissions from its CO boilers by 1997. Exxon first applied for IERCs to use in its ACP on March 14, 1999, and BAAQMD approved and issued IERCs for the 1997 and 1998 CGPs with a notice of exemption under CEQA on February 1, 2000. Valero initially requested BAAQMD approval of its ACP on February 14, 2000, and BAAQMD approved the ACP on July 30, 2000, based on a negative declaration. The IERCs and the ACP were both challenged in court, and the Superior Court issued its decision requiring this EIR on March 1, 2001. Following a long contracting process, BAAQMD finally issued an NOP on December 28, 2001. Thus, there is a complete disconnect between the timing of the NOP and the pre-project conditions because (i) the beginning of the project, i.e., the generation and granting of IERCs, was exempt from CEQA review, and (ii) litigation led to a court ruling that invalidated BAAQMD's initial CEQA review of the ACP.

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[11] CEQA § 21002.1(a).

[12] CEQA Guidelines § 15125(a).

[13] Id. (emphasis added).

[14] See, e.g., Save Our Peninsula Committee v. Monterey County Board of Supervisors, 87 Cal. App. 4th 99, 126 (2001) (rejecting as the baseline water production figures over the three years closest to project approval in favor of older, historical water use on the property when the project began, which more accurately represented baseline).

More importantly, during this long history of BAAQMD's review of Valero's project, Valero has continued to reduce emissions from its CO boilers solely to generate IERCs that it can use in an ACP. By the time BAAQMD issued the NOP, Valero had reduced the NOx emission rate of its CO boilers to approximately one-third of the regulatory level. It would be inappropriate for BAAQMD to use a baseline that is artificially lowered due to Valero's reduced emissions when those reduced emissions result solely from the project under review. The appropriate baseline is the period before Valero began to generate IERCs (i.e., before 1997) so that the EIR provides a meaningful context from which to evaluate the project as a whole.

Furthermore, the most appropriate baseline for assessing the impacts of Valero's project is the baseline already established under Rule 2-9 for calculating the quantity of IERCs. The very purpose of the baseline in Rule 2-9 is to ensure that any emission reductions used to generate IERCs are real, surplus, permanent and enforceable. These are the same considerations used under CEQA to assess an impact on the environment. The IERC baseline is the average emission rate over the five-year period preceding Valero's first CGP. In this case, the baseline period is the five-year period from 1992 through 1996.

In order to generate IERCs, Valero must operate the CO boilers with an emission rate lower than the IERC baseline emission rate of 0.09915 lb/mmBTU. Therefore, the impact of Valero's ACP is to induce Valero to operate the CO boilers below this emission rate. Valero has in fact operated the CO boilers below this rate every year since 1997 (see **Table 2-5)** and will operate below this rate in the future since the legal emission rate for CO boilers will drop from 300 ppm to 150 ppm (adjusted to 3% O2) on July 1, 2002.

VALERO'S PROJECT WOULD NOT HAVE A SIGNIFICANT IMPACT EVEN IF BAAQMD USED A LATER BASELINE PERIOD

Although it would not be appropriate in this case to pick, as a baseline period, a period after the refinery began generating IERCs (i.e., a period after 1996), picking such a baseline – such as the baseline of the time of the NOP – would not change the analysis of the impacts of Valero's ACP.

First, it would be appropriate in this case to establish the baseline at the Rule 9-10 emission limit for CO boilers since, prior to the NOP date, Valero could legally operate its CO boilers with an emission rate up to the legal limit, and this will not change with the ACP. Valero will still have that ability. Thus the regulatory limit establishes an appropriate baseline for CEQA purposes. Since Valero's project requires Valero to operate below the regulatory limit in order to generate IERCs, it will have a beneficial impact on the environment.

Second, the baseline for determining whether a project has impacts should account for the fact that Valero has banked or earned IERCs, since applicable BAAQMD rules allow Valero to use IERCs in lieu of making other emission reductions at the refinery. Therefore, it would be appropriate to treat banked IERCs as part of existing conditions for purposes of calculating whether a project will cause a change in emissions. Use of credits in this context simply shifts emission reductions from a later time to an earlier time, which is one of the key benefits of using ACPs. Including IERCs in an existing baseline is consistent with BAAQMD's treatment of emission reduction credits in other contexts. For example, when BAAQMD prepares an emission

inventory as part of its attainment demonstration for EPA, it must list emission reduction credits ("ERCs") in the inventory as if they were emissions to the air to calculate BAAQMD's baseline from which it must find reductions to demonstrate attainment. Aside from the baseline calculation, use of the existing banked IERCs does not cause a change in the physical environment because once the IERCs are banked, there is no further physical activity that affects the environment. Approval of Valero's ACP incorporating the use of existing IERCs thus does not represent an adverse change in the environment.

Third, even if the NOP date were used to establish the baseline, BAAQMD would still use a multi-year period to calculate the baseline. In this case, a three-year period from 1999 to 2001 would represent operations prior to the NOP date and would span the time of Valero's permit applications and the period of environmental analysis. On July 1, 2002, the NOx emission limit applicable to Valero's CO boilers will go down to 150 ppm (adjusted to 3% O_2) from 300 ppm. This new limit is below Valero's three-year average NOx emission rate from Valero's CO boilers. Therefore, there can be no impact on air quality from Valero's project regardless of the emission rate from its CO boilers.

3.4 CUMULATIVE IMPACTS

Valero's ACP improves air quality by decreasing NOx emissions at Valero's refinery. Therefore, Valero's project will not contribute to any significant cumulative impacts on air quality.

3.5 MITIGATION

The project will have not have a significant impact on the environment. Therefore, no mitigation measures are required.

TABLE 3-1
CRITERIA AIR POLLUTANT STANDARDS, EFFECTS, AND SOURCES

Pollutant	Averaging Time	State Standard	National Standard	Pollutant Health and Atmospheric Effects	Major Pollutant Sources
Ozone (O3)	1 hour 8 hours	0.09 ppm ---	0.12 ppm 0.08 ppm	High concentrations can directly affect lungs, causing irritation. Long-term exposure may cause damage to lung tissue.	Formed when reactive organic gases (ROG) and nitrogen oxides (NO_X) react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial / industrial mobile equipment.
Carbon Monoxide (CO)	1 hour 8 hours	20 ppm 9.0 ppm	35 ppm 9 ppm	Classified as a chemical asphyxiant, carbon monoxide interferes with the transfer of fresh oxygen to the blood and deprives sensitive tissues of oxygen.	Internal combustion engines, primarily gasoline-powered motor vehicles.
Nitrogen Dioxide (NO2)	1 hour Annual Avg.	0.25 ppm ---	--- 0.053 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown.	Motor vehicles, petroleum-refining operations, industrial sources, aircraft, ships, and railroads.
Sulfur Dioxide (SO2)	1 hour 3 hours 24 hours Annual Avg.	0.25 ppm --- 0.04 ppm ---	--- 0.5 ppm 0.14 ppm 0.03 ppm	Irritates upper respiratory tract; injurious to lung tissue. Can yellow the leaves of plants, destructive to marble, iron, and steel. Limits visibility and reduces sunlight.	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
Respirable Particulate Matter (PM-10)	24 hours Annual Avg.	50 ug/m^3 30 ug/m^3	150 ug/m^3 50 ug/m^3	May irritate eyes and respiratory tract, decreases in lung capacity, cancer and increased mortality. Produces haze and limits visibility.	Dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g. wind-raised dust and ocean sprays).
Fine Particulate Matter (PM-2.5)	24 hours Annual Avg.	--- ---	65 ug/m^3 15 ug/m^3	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and results in surface soiling.	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; Also, formed from photochemical reactions of other pollutants, including NO_X, sulfur oxides, and organics.
Lead	Monthly Quarterly	1.5 ug/m^3 ---	--- 1.5 ug/m^3	Disturbs gastrointestinal system, and causes anemia, kidney disease, and neuromuscular and neurological dysfunction.	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.

NOTE: ppm = parts per million; ug/m^3 = micrograms per cubic meter.
SOURCES: South Coast Air Quality Management District, *1997 Air Quality Management Plan,* November 1996; http://www.arb.ca.gov/health/health.htm.

TABLE 3-2
ATTAINMENT STATUS OF THE BAY AREA FOR THE STATE AND NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	Attainment Status	
		State Standards[1]	National Standards[2]
Ozone	8-Hour	---	Unclassified[3]
	1-Hour	Serious Nonattainment	Severe Nonattainment
Carbon Monoxide	8-Hour	Unclassified[3]	Unclassified[3]/Attainment
	1-Hour	Unclassified[3]	Unclassified[3]/Attainment
Nitrogen Dioxide	Annual Average	---	Attainment
	1-Hour	Attainment	---
Sulfur Dioxide	Annual Average	---	Attainment
	24-Hour	Attainment	Attainment
	1-Hour	Attainment	---
Respirable Particulate Matter (PM-10)	Annual Arithmetic mean	---	Attainment
	Annual Geometric Mean	Nonattainment	---
	24-Hour	Nonattainment	Unclassified[3]
Fine Particulate Matter (PM-2.5)[4]	Annual Arithmetic Mean	---	Unclassified[3]
	24-Hour	---	Unclassified[3]
Lead	Calendar Quarter	---	Attainment
	30 Day Average	Attainment	---

1 California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, and PM-10 are values that are not to be exceeded.
2 National standards other than for ozone and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year.
3 In 1997, EPA established an 8-hour standard for ozone, and annual and 24-hour standards for very fine particulate matter (PM-2.5). As of October 2001, BAAQMD did not have sufficient monitoring data to determine the region's attainment status.
4 PM2-5 standards are not yet effective or currently applicable.

SOURCE: California Air Resources Board, 2000 State and National Area Designation Maps of California; http://www.arb.ca.gov/desig/desig.htm.

TABLE 3-3
AIR QUALITY DATA SUMMARY (1997–2001) FOR THE PROJECT AREA

Pollutant	Standard[a]	Monitoring Data by Year 1997	1998	1999	2000	2001
Ozone:						
Highest 1 Hour Average (ppm) [b]		**0.10**	**0.12**	0.11	0.08	0.09
Days over State Standard	0.09	1	3	4	0	0
Days over National Standard	0.12	0	0	0	0	0
Highest 8 Hour Average (ppm) [b]	0.08	0.08	0.08	**0.09**	0.06	0.07
Days over National Standard		0	0	1	0	0
Carbon Monoxide:						
Highest 1 Hour Average (ppm) [b]	20	NA	NA	6.6	6.5	NA
Days over State Standard		0	0	0	0	0
Highest 8 Hour Average (ppm) [b]	9.0	4.9	5.3	5.5	5.1	4.1
Days over State Standard		0	0	0	0	0
Particulate Matter (PM-10):						
Highest 24 Hour Average ($\mu g/m^3$) [b]	50	**85.0**	**71.3**	**83.7**	**53.0**	**86.1**
Days over State Standard		3	1	3	1	2
Number of samples [c]		60	61	57	61	24
Annual Average ($\mu g/m^3$) [b]	30	15.5	14.9	15.2	17.0	16.3

a Generally, state standards are not to be exceeded and national standards are not to be exceeded more than once per year.

b ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.

c PM-10 is not measured every day of the year. "Number of samples" refers to the number of days in a given year during which PM-10 was measured at the Tuolumne Street station in Vallejo.

NOTE: Values in **bold** are in excess of applicable standard. NA = Not Available.

SOURCE: California Air Resources Board, *Summaries of Air Quality Data*, 1997, 1998, 1999, 2000, 2001; http://www.arb.ca.gov/adam.

TABLE 3-4
EMISSION REDUCTIONS FROM VALERO'S PROJECT

Year	NOx Emissions from CO boilers *tons/year*	NOx Emissions from Heaters and Boilers (other than CO boilers) *tons/year*	Total NOx Emissions from sources involved in ACP *tons/year*	Difference between Annual NOx Emissions and Baseline *tons/year*
1992-96	2304	743	3047	Baseline
1997	2007	746	2753	-294
1998	2200	778	2978	-69
1999	1802	733	2535	-512
2000	1749	778	2527	-520
2001	1019	738	1757	-1290
2002-04 (*)	965	743	1708	-1339
2005 + (*)	965	635	1600	-1447

(*) Estimated Values

CHAPTER 4
ALTERNATIVES

CEQA requires an EIR to describe and evaluate a reasonable range of alternatives to a proposed project. The purpose of the analysis is this chapter is to evaluate the existence of reasonable alternatives that could eliminate or minimize any significant impacts associated with the proposed project. This analysis is conducted to foster informed decision making and public participation in the environmental process. The alternatives discussed in an EIR should be feasible and should feasibly attain most of the basic objectives of the proposed project. As discussed in Section 2, "Project Description," the objective of Valero's ACP is to comply with the NOx emission limits in Rule 9-10.

In this case, evaluation of feasible alternatives is limited to those that are legally feasible, i.e., those that allow Valero to comply with Rule 9-10. The range of alternatives studied in an EIR should be broad enough to permit a reasoned choice by decision makers when considering the merits of a project, however, the discussion of alternatives need not be exhaustive. The State CEQA Guidelines also normally require an EIR to evaluate a "no project" alternative and to consider alternative sites. Consideration of alternative sites is not appropriate here, since the purpose of the project is to reduce NOx emissions from an existing refinery.

4.1 IDENTIFICATION OF ALTERNATIVES

The only legal alternative to using an ACP to comply with Rule 9-10 would be to retrofit the affected units that are subject to Rule 9-10 with BARCT level controls. This alternative is discussed in section 4.2 below. If Valero were not implementing an ACP, it would be legally required to install BARCT. Therefore, BARCT controls also constitute the "no project alternative."

4.2 EVALUATION OF THE NO PROJECT ALTERNATIVE – INSTALLING BARCT CONTROLS ON AFFECTED HEATERS AND BOILERS

Under this "no project" alternative, Valero would install controls necessary to reduce emissions from affected units to a daily average of 0.033 lb/mmBTU. **Table 4-1** identifies the NOx controls that might be possible to lower the average emissions from affected units to 0.033 lb/mmBTU. The controls identified in **Table 4-1** include low-NOx burners (LNB), flue-gas recirculation (FGR), and selective catalytic reduction (SCR). Under the no-project alternative, not all units would need the controls identified in **Table 4-1**. Only a sufficient number of affected units would have to be retrofitted so that the daily average emissions from all affected units combined would

meet the limit established by Rule 9-10. Installation of the LNBs, FGR, and SCR units would involve construction and other activities that could potentially have impacts on the environment that would need to be considered under CEQA (in an initial study or other document).

Without an ACP, Valero would not reduce emissions from the CO boilers below the regulatory limit. Thus, NOx emissions from the CO boilers would be higher than under the proposed project. On a long-term average, additional NOx emissions from the CO boilers would be at least 10% higher than the reductions from the affected heaters and boilers due to the 10% environmental surcharge in Rule 2-9. In fact, the difference would be greater than 10% for a number of reasons: (i) during Phase 1, Valero's IERC baseline was derived from an average emission rate that was lower then the regulatory threshold, (ii) IERC generation is reduced if Valero operates at a throughput greater than its baseline throughput, (iii) Valero does not earn IERCs for reducing throughput even though this reduces overall emissions from the CO boilers, (iv) Valero does not earn IERCs for reducing its heat usage, (v) Valero has agreed with the California Attorney General to retire 250 tons of IERCs, (vi) Valero must over-generate IERCs to ensure it has enough, and (vii) some IERCs are likely to expire without being used. **Table 4-2** shows a comparison of total estimated NOx emissions from CO boilers and from other affected units under the proposed project and the no project alternative. As shown, over the first ten years, emissions under the proposed project are substantially lower than estimated NOx emissions under the no project alternative. After 10 years, the annual emissions from the project are expected to be 30 TPY less than the no project alternative (due to the 10% Environmental Benefit Surcharge required by BAAQMD Regulation 2-9-306).

The ACP will not only reduce NOx emissions by more than the no project alternative, but will also reduce emissions sooner. This is a direct result of Rule 2-9's requirement that IERC certificates be issued and banked by BAAQMD before they can be relied on. The advantages of early reductions can be seen by reviewing the history of Valero's project to date. Through the end of the first quarter 2002, Valero has generated 2,245 tons of IERCs, but has used only 74 tons of IERCs. As discussed above, Valero had to reduce emissions by much more than 2,245 tons in order to generate these IERCs, but has only emitted 67 tons over the Rule 9-10 limits.

Environmentally Superior Alternative

In Chapter 3 of this EIR, BAAQMD determined that Valero's project will not have a significant impact on the environment. Therefore, there is no CEQA requirement for consideration of alternatives to further reduce impacts. Nonetheless, BAAQMD has evaluated the only legally feasible alternative available to an ACP, which would be BARCT compliance. Since Valero's ACP results in lower overall emissions than the "no project" alternative and the "no project" alternative could potentially have construction and other environmental impacts not present in Valero's project, BAAQMD considers Valero's proposed ACP to be the environmentally superior alternative.

TABLE 4-1
ALTERNATIVE EMISSION REDUCTIONS FOR SOURCES SUBJECT TO REGULATION 9 RULE 10 AVERAGE NOx

Source	Description	Maximum Rated Capacity *mmBTU/hr*	Typical Firing Rate *mmBTU/hr*	Existing Control Equipment	Existing NOx Emission Factor *lb/mmBTU*	Average NOx Emissions *lb/day*	Possible Additional Controls	Emission Factor with Additional Control *lb/mmBTU*	Emissions with Additional Control *lb/day*
F-103	Jet Hydrofiner Hydrogen Preheat Furnace	53	25	None	0.184	110.40	LNB	0.035	21.0
F-104	Naphtha Feed Preheat	62	38	None	0.155	141.36	LNB	0.035	31.92
F-301	Stream Methane Reforming Furnace	614	514	LNB	0.047	579.79	SCR & ID Fans	0.01	123.36
F-351	Stream Methane Reforming Furnace	614	460	LNB	0.048	529.92	SCR & ID Fans	0.01	110.4
F-401	HCU Recycle Gas Furnace	200	170	LNB/TDN	0.04	163.2	None	.004	163.2
F-601	Cat Feed Hydrofiner Treat Gas Furnace	33	22	None	0.282	148.90	SCR	0.01	5.28
F-701	FCCU Preheat Furnace	230	205	None	0.133	654.36	LNB	0.035	172.2
F-801	Cat Naphtha Hydrofiner Furnace	33	12	None	0.155	44.64	LNB	0.035	10.08
F-902	Coker Steam Superheater Furnace	20	12	LNB	0.049	14.11	None	.049	14.11
F-2901-4	Powerformer Furnaces	463	356	None	0.141	1204.70	LNB	0.035	299.04
F-2905	Powerformer Regeneration Furnace	74	9	None	0.146	31.54	LNB	0.035	7.56
F-2906	Powerformer Reactivation Furnace	14	2	None	0.146	7.01	LNB	0.035	1.68
F-4460	Hot Oil Furnace	351	259	SCR	0.008	49.73	None	.008	49.73

Source	Description	Maximum Rated Capacity *mmBTU/hr*	Typical Firing Rate *mmBTU/hr*	Existing Control Equipment	Existing NOx Emission Factor *lb/mmBTU*	Average NOx Emissions *lb/day*	Possible Additional Controls	Emission Factor with Additional Control *lb/mmBTU*	Emissions with Additional Control *lb/day*
H-1	Crude Furnace	33	30	LNB	.033	23.76	None	.033	23.76
H-2A	Small Boiler	15	10	LNB	.033	7.92	None	.033	7.92
H-2B	Small Boiler	15	10	LNB	.033	7.92	None	.033	7.92
SG-2301	Utility Boiler	218	81	LNB/FGR	0.029	56.38	None	.029	56.38
SG-2302	Utility Boiler	218	83	None	0.148	294.82	LNB/FGR	0.029	57.77

TABLE 4-2
ALTERNATIVE EMISSION REDUCTIONS FOR SOURCES SUBJECT TO REGULATION 9 RULE 10 AVERAGE NOx (tons/year)

Year	Valero's ACP			No-Project Alternative			Annual Difference	Cumulative Difference
	NOx Emissions From CO boilers	NOx Emissions From Heaters and Boilers	Total NOx Emissions	NOx Emissions From CO boilers	NOx Emissions from Heaters and Boilers	Total NOx Emissions		
1997	2007	746	2753	2600	746	3346	-593	-593
1998	2200	778	2978	2700	778	3478	-500	-1093
1999	1802	733	2535	2170	733	2903	-368	-1461
2000	1749	778	2527	2741	754	3495	-968	-2429
2001	1019	738	1757	2739	699	3438	-1681	-4110
2002	965	743	1708	1950	515	2465	-757	-4867
2003	965	743	1708	1300	332	1632	76	-4791
2004	965	743	1708	1300	332	1632	76	-4715
2005	965	635	1600	1300	332	1632	-32	-4747
2006	965	635	1600	1300	332	1632	-32	-4779

APPENDIX A

LIST OF REFERENCES

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APPENDIX C

HEARING BOARD ORDER REGARDING IERCS, JUNE 29, 2000

APPENDIX D

ORIGINAL INITIAL STUDY AND NEGATIVE DECLARATION FOR ACP

APPENDIX E

SUPERIOR COURT ORDER, MARCH 1, 2001

APPENDIX F

REVISED INITIAL STUDY

APPENDIX G

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APPENDIX H

COMMENTS RECEIVED ON DRAFT EIR

APPENDIX I

RESPONSES TO COMMENTS RECEIVED ON DRAFT EIR

[Insert responses to comments]