

State of California  
Department of Housing and Community Development



**DRAFT  
ENVIRONMENTAL IMPACT REPORT**

**Adoption of Regulations Permitting Statewide Residential Use of  
Chlorinated Polyvinyl Chloride (CPVC) Plastic Plumbing Pipe without  
First Making a Finding of Potential Premature Metallic Pipe Failure  
Due to Local Water or Soil Conditions**

**Arnold Schwarzenegger, Governor**

**Lynn Jacobs, Director**  
Department of Housing and Community Development

**July 2006  
State Clearinghouse No. 2006012044**

Interested parties are encouraged to review and comment on this EIR.  
The Lead Agency will review, consider, and respond to all significant  
environmental points raised prior to making a final determination on this  
project. Comments must be made in writing to:

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## Abbreviations and Acronyms used in the EIR

ACGIH	American Conference of Governmental Industrial Hygienist
AMND	Amended Mitigated Negative Declaration
ANSI	American National Standards Institute
ARB	California Air Resources Board
Cal/EPA	California Environmental Protection Agency
Cal/OEHHA	California Office of Environmental Health Hazard Assessment
CBSC	California Building Standards Commission
CEQA	California Environmental Quality Act
CPC	California Plumbing Code
CPVC	Chlorinated Polyvinyl Chloride
D/W/V	Drain/Waste/Vent
DBP	Disinfection Byproducts
DEIR	Draft Environmental Impact Report
DHS	California Department of Health Services
DPI	Durable Plastic Item
EIR	Environmental Impact Report
EPA	United States Environmental Protection Agency
FWOCA	Federal Water Pollution Control Act
HAA	Haloacetic acid
HAA5	Five Haloacetic Acids
HAP	Hazardous Air Pollutant
HCD	California Department of Housing and Community Development
IDSE	Initial Distribution System Evaluation
ISOR	Initial Statement of Reasons
IWMB	California Integrated Waste Management Board
LRAA	Locational Running Annual Average
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MEI	Maximally Exposed Individual

MEK	Methyl Ethyl Ketone
MF	Multifamily Unit
MND	Mitigated Negative Declaration
MRDL	Maximum Residual Disinfectant Level
MRDLG	Maximum Residual Disinfectant Level Goal
NAAQS	National Ambient Air Quality Standards
NSF	NSF International
PEL	Permissible Exposure Level
PEX	Crosslinked Polyethylene
PM	Particulate Matter
PM <sub>10</sub>	Particulate Matter 10 microns or smaller in diameter
ppm	Parts per million = mg/L
PVC	Polyvinyl Chloride
RAA	Running Annual Averages
RACT	Reasonable Available Control Technology
ROG	Reactive Organic Gases
SF	Single Family Unit
SIP	State Implementation Plan
SPAC	Single Product Allowable Concentration
STEL	Short Term Exposure Level
SWRCB	State Water Resource Control Board
TAC	Toxic Air Contaminant
TAC-H <sub>2</sub> O	Total Allowable Concentration
THF	Tetrahydrofuran
THM	Trihalomethane
TTHM	Total Trihalomethanes
UPC	Uniform Plumbing Code
VOC	Volatile Organic Compound

## **Executive Summary**

### **Proposed Action**

The current California Plumbing Code (**CPC**) restricts the use of Chlorinated Polyvinyl Chloride (**CPVC**) pipe for potable water to those situations where the local building official makes a finding that there was or will be a premature failure of metallic pipe due to corrosive water and/or soil conditions (referred to as the “**Findings Requirement**”). This environmental impact report (**EIR**) will be used by the Lead Agency to consider the potentially significant environmental effects of removing the Findings Requirement. If, based on a certified Final EIR, the Lead Agency determines that it is appropriate to recommend this modification of the CPC; the certified Final EIR will be forwarded to California Building Standards Commission (**CBSC**) for consideration. The CBSC is a Responsible Agency under the California Environmental Quality Act (**CEQA**), and it may use the EIR for a subsequent discretionary approval of such modification.

The Project is the amendment of regulations (i.e., building standards) pertaining to the use of CPVC pipe for potable water piping in buildings under the jurisdiction of the Lead Agency which include: hotels, motels, lodging houses, apartment houses, dwellings, dormitories, condominiums, shelters for homeless persons, congregate residences, employee housing, factory-built housing and other types of dwellings containing sleeping accommodations with or without common toilet or cooking facilities including accessory buildings, facilities, and uses thereto; as well as permanent buildings, and permanent accessory buildings or structures, constructed within mobilehome parks and special occupancy parks that are under the control and ownership of the park operator.

This EIR is limited to the impacts associated with the Project. The Project is not the approval of CPVC plastic pipe for potable water distribution. The Project is the removal of the Findings Requirement, which served as a prerequisite to local approvals of CPVC installations, from the current California Plumbing Code. Removal of the Findings Requirement would likely result in an

increase in CPVC installations for potable water distribution in residential structures.

The 2000 MND analyzed the impacts associated with conditional CPVC use (by virtue of the Findings Requirement). That analysis included potential impacts on water quality. In this EIR, the Lead Agency will only consider water quality impacts which are associated with increased use of CPVC across the state (not within a particular household), as well as any new information related to individual-unit use that was not available or could not have been known at the time the MND was approved.

### **Public Involvement and Areas of Concern**

On January 11, 2006, the Lead Agency issued a Notice of Preparation (NOP) of a Draft Environmental Impact Report. A copy of the Notice and the distribution list are attached in Appendix B.

The Lead Agency received two comments on the NOP. The first was from the law firm of Adams Broadwell Joseph & Cardozo who submitted a letter on behalf of the Coalition for Safe Building Materials. The letter supported the Lead Agency's decision to conduct an EIR on the Project. The second comment was a letter from the Department of Toxic Substance Control (DTSC), Human and Ecological Risk Division. The letter indicated that the proposed project did not appear to involve any new materials or risks and did not fall under the responsibility or regulatory purview of DTSC.

An Agency Scoping Meeting was held on May 1, 2006. No agencies, other than the Lead Agency attended the meeting. The Agency Scoping Meeting Notice and Distribution List are attached in Appendix C.

### **Alternatives Considered**

Four alternative Projects are considered: 1) No project; 2) Do not delete the Findings Requirement, but require the use of Low-VOC Adhesives; 3) Delete the Findings Requirement and require the use of Low-VOC CPVC Adhesives;

and 4) Delete the Findings Requirement but do not require the use of Low-VOC CPVC Adhesives.

1) With this alternative, the Lead Agency would recommend that no changes be made to the plumbing code that relate to CPVC use. Local jurisdictions would still be able to approve CPVC pipe for potable water piping in residential buildings based on local findings related to unique topographic, geographic or climatic conditions or based on the Findings Requirement. The VOC content of CPVC adhesives would vary across the state based on individual air district requirements.

2) Under this alternative, the Lead Agency would recommend that the CBSC re-adopt the current CPVC-related regulations, keeping the Findings Requirement in place. Low-VOC CPVC adhesives would be required.

3) Under this, the preferred alternative, the Lead Agency would recommend that the CBSC adopt the proposed CPVC-related regulations, which would delete the Findings Requirement and require the use of Low-VOC CPVC adhesives.

4) This alternative would cause the Findings Requirement to be deleted from the plumbing code, but would not require the use of Low-VOC cements or primers. The use of CPVC would likely increase. The use of VOC content of CPVC adhesives would vary across the state with the individual air district requirements.

## **Environmental Impacts and Mitigation Measures**

### Air Quality

Use of CPVC Adhesives will cause volatile organic compounds (VOCs) to be released into the air. VOCs can be precursors to ozone. Deleting the Findings Requirement may result in an increase in the number of residential units that are plumbed with CPVC and thus may increase the amount of ozone precursors emitted. This effect is mitigated somewhat by the requirement of Low-VOC Adhesives. Many areas of California find it difficult to achieve and maintain "attainment status" within the state and federal ozone regulations. Even

the addition of minor amounts of VOCs could result in a cumulative impact within these areas.

Air Impacts:

1. **Less than Significant:** Conflict with or obstruct implementation of the applicable air quality plan;
2. **Significant and Unavoidable:** Violate any appropriate air quality standard or contribute substantially to an existing or projected air quality violation;
3. **Significant and Unavoidable:** Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
4. **Less than Significant:** Expose sensitive receptors to substantial pollutant concentrations;
5. **Less than Significant:** Create objectionable odors affecting a substantial number of people.

Water Quality

**Less than Significant:** the conditional use of CPVC material for potable water piping was considered in the 2000 MND. The removal of the Findings Requirement will not result in any new water quality impacts. Chemicals released into the water after CPVC installation will be reduced by the inclusion of the Low-VOC Adhesive requirement.

Worker Safety

**Less than Significant:** the conditional use of CPVC material for potable water piping was considered in the 2000 MND. The removal of the Findings Requirement will not result in any new worker safety impacts. VOCs emitted during CPVC installation will be reduced by the inclusion of the Low-VOC Adhesive requirement.

Solid Waste

**Less than Significant:** the conditional use of CPVC material for potable water piping was considered in the 2000 MND. The removal of the Findings Requirement will not result in any new solid waste impacts. While the cumulative effect on solid waste disposal may occur in the future, the effect is not expected to be any greater than the current plastic disposal issues.

## **Chapter 1: Background and Scope of the Current EIR**

Consideration of unrestricted use of chlorinated polyvinyl chloride (**CPVC**) pipe for residential potable water piping has a long history of consideration in California. In 1982, for the first time, the Uniform Plumbing Code (**UPC**), published by the International Association of Plumbing and Mechanical Officials, permitted the use of CPVC for potable water plumbing. The Department of Housing and Community Development (the **Lead Agency**) proposed to adopt this expanded use as part of its routine adoption of the 1982 UPC. However, various objections were raised resulting in the decision to prepare an environmental impact report (**EIR**). A task force of stakeholders mutually agreed upon the scope of the EIR and further agreed to jointly fund the preparation of the EIR by a private consultant. It took until 1989 before a draft EIR was ready for circulation. The draft generated such voluminous comments the effort to complete a final EIR was abandoned. Through an act of the Legislature, CPVC pipe was permitted for residential use subject to certain installation and worker safety measures from October 1995 through December 31, 1997, when the legislation expired by its own terms. Also in 1987, the Lead Agency performed an Initial Study of CPVC pipe for the same use. The Initial Study led to the circulation of a Draft EIR (**DEIR**).<sup>1</sup>

The Lead Agency concluded in the DEIR that the statewide approved use of CPVC water pipe would not result in significant adverse impacts on the environment. In 1998, the final EIR was certified. The Lead Agency subsequently was sued by plaintiffs who claimed the EIR was insufficient and failed to comply with the California Environmental Quality Act (**CEQA**). The action was settled out of court in September of 2000 with a court-approved settlement agreement. The Lead Agency agreed to rescind the certification of the EIR and its regulatory approval of CPVC, and the plaintiffs dropped the

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<sup>1</sup> State Clearinghouse No. 970820040

lawsuit.<sup>2</sup> Working with the plaintiffs, the Lead Agency again prepared an Initial Study, but this time the project was limited to the use of CPVC pipe in residential potable water systems ONLY where a finding had been made that there was or would be a premature failure of metallic pipe because of corrosive water and/or soil conditions (referred to as the “**Findings Requirement**”) and where certain mitigation measures were used. Based on the Initial Study, the Lead Agency found, in light of the whole record before it, that there was no substantial evidence that the project would have a potential significant impact on the environment.

As a result of these findings, the Lead Agency prepared, again with the cooperation of plaintiffs, a Mitigated Negative Declaration (**2000 MND**) pursuant to CEQA and circulated the document for public review and comment. The MND received final approval from the Lead Agency in November 2000.<sup>3</sup> The approved MND did not limit the number localities that were authorized to make findings. As long as the mitigation measures were employed and the Findings Requirement was satisfied, the MND authorized statewide use of CPVC pipe in all residential structures. No timely lawsuits were brought to contest the validity of the Initial Study or the Lead Agency’s findings, the CEQA process followed by the Lead Agency, or the approval or contents of the MND. The Lead Agency proposed, and the California Building Standards Commission (**CBSC**) ultimately approved, amendments to the California Plumbing Code (**CPC**) that permitted the use of CPVC pipe for residential potable water distribution subject to the Findings Requirement and specified installation and worker safety requirements.

In March 2005, the Lead Agency prepared a Draft Addendum to the adopted Mitigated Negative Declaration (**AMND**). The AMND project was the same as the MND project, except that the Findings Requirement was removed. Removal of the Findings Requirement would have made CPVC pipe accessible

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<sup>2</sup> See “Rescinding of the Certification and Notice of Determination for the Final Environmental Impact Report Entitled Chlorinated Polyvinyl Chloride (CPVC) Pipe Used For Potable Water Piping in Residential Buildings,” State Clearing house Number 970820040.

<sup>3</sup> See CEQA document, State Clearing House No. 2000091089.

to all Californians as a plumbing material alternative. The AMND was greeted by comments from a few members of the public that an AMND was an inappropriate CEQA document to use in this situation because the AMND project was an entirely different project than the MND and thus a full EIR analyzing the impacts of the “new” project was required. The Lead Agency considered this and the other comments on the draft AMND and decided that the public would be better served by an EIR that would provide a more in-depth analysis of the cumulative effects of the removal of the Findings Requirement.

The Lead Agency does not agree that the AMND project was a totally “new” project. Both projects were for CPVC pipe use in residential potable water distribution. Both projects required the same mitigation measures. The AMND project only differed from the MND project in its removal of the Findings Requirement. While it is true that removal of the Findings Requirement could lead to increased CPVC use, it would have no effect on the impacts associated with individual applications. Removal of the Findings Requirement does not increase the impacts on potable water quality, worker safety (on a single-installation basis), or the risk of fire-associated impacts.

The AMND was also criticized for using estimates and assumptions. However, such methods are unavoidable for this type of project. This is not a typical CEQA project where a specific, discrete action will be taken and where the impacts are known with a reasonable degree of certainty. Rather, this project involves a change in a regulation. By itself, this will cause no direct impacts to the environment. However, it may cause indirect changes in the environment when others act on that regulation. Accordingly, estimates and assumptions are necessary because of the number of uncertain variables. It is not possible to predict exactly how many houses will be built with CPVC plumbing; where they will be built; how big they will be; what exact number of plumbing fixtures will be used; what type of cement the plumber will use; how much cement and primer will be used; what the temperature, humidity and barometric pressure will be on the day the installation is done; or any number of other factors that affect the environmental impacts of CPVC pipe use.

The Lead Agency also acknowledges that the AMND was deficient in the cumulative impacts assessment and that any new significant information that was not known at the time of the MND must be considered. This current EIR will address those issues and it will use assumptions and estimates. This current EIR will not repeat the review of impacts that have been addressed in the MND.

In California, CPVC pipe is currently allowed in a diverse range of occupancies. It is used for potable water in mobilehomes, other manufactured homes, recreational vehicles, commercial modulars, and in general residential construction in some local jurisdictions (those areas where CPVC was approved prior to the 1995 law's expiration). Of course, it is also allowed where a local building official approves the use of CPVC water pipe inside residential structures as an alternate material to metallic pipe after making the finding that there is or will be a premature failure of metallic pipe because of corrosive water and/or soil conditions.

## **Chapter 2: Project Description and Alternatives**

### **A. Statement of Objectives**

The Lead Agency's objective in pursuing this Project is to eliminate unnecessary procedures for consumers who wish to use chlorinated polyvinyl chloride (**CPVC**), a corrosion-resistant plastic piping material, as an alternative potable water plumbing material.

### **B. Use of this EIR**

The current UPC permits the unrestricted use of CPVC pipe for hot and cold water distribution within residential buildings. The current CPC conditions the use of CPVC to those situations where the local building official makes a finding that there was or will be a premature failure of metallic pipe due to corrosive water and/or soil conditions (referred to as the "**Findings Requirement**"). This EIR will be used by the Lead Agency to consider the potentially significant environmental effects of removing the Findings Requirement, and thereby permitting unconditional use of CPVC pipe in both new construction and in the remodeling of residential buildings in California. If, based on a certified Final EIR, the Lead Agency determines that it is appropriate to recommend this modification of the CPC; the certified Final EIR will be forwarded to CBSC for consideration. The CBSC is a Responsible Agency, and it may use the EIR for a subsequent discretionary approval.

Many of the issues and potentially significant effects reviewed in this EIR may be of relevance to future projects involving plumbing materials. While it is not possible to know what these potential future projects might be, the Lead Agency expects that the EIR may be of some use in the preliminary review and scoping of future projects with potentially significant impacts related to the use of CPVC for other purposes.

### C. Project Description

The project is the amendment of regulations (i.e., building standards) pertaining to the use of CPVC pipe for potable water piping in buildings under the jurisdiction of the Lead Agency which include: hotels, motels, lodging houses, apartment houses, dwellings, dormitories, condominiums, shelters for homeless persons, congregate residences, employee housing, factory-built housing and other types of dwellings containing sleeping accommodations with or without common toilet or cooking facilities including accessory buildings, facilities, and uses thereto; as well as permanent buildings, and permanent accessory buildings or structures, constructed within mobilehome parks and special occupancy parks that are under the control and ownership of the park operator.

In this EIR, the terms “**CPVC**” and “**CPVC pipe**” refer to chlorinated polyvinyl chloride pipe, fittings, and the materials used to join CPVC pipe and fittings, unless the context clearly indicates otherwise. These regulations, if approved, would become part of the California Plumbing Code, which is a segment of the California Building Standards Code. The CBSC is responsible for final adoption of the California Building Standards Code. The CBSC receives proposed codes from a number of public agencies which have statutory authority to propose codes for various types of occupancies. The code provisions related to potable water piping in residential buildings are the responsibility of the Lead Agency.

The modifications to the existing plumbing code would entail: 1) removing the current requirement that a building official make a finding that there was or will be a premature failure of metallic pipe because of corrosive water and/or soil conditions (referred to as the “**Findings Requirement**”) prior to allowing CPVC to be used for potable water piping; and 2) requiring the use of Low-VOC adhesives. Low-VOC adhesives are CPVC cements and primers (if one-step cement is not used) with a limited amount of volatile organic compounds (**VOCs**). The express terms of the proposed code change appear at the end of this chapter in section H.

#### **D. Projected Extent of Future Use of CPVC**

If the proposed regulations are adopted, increased use of CPVC pipe is anticipated in residential buildings throughout the state. The other plumbing materials, such as metallic pipe, which are currently permitted, would continue to be allowed. CPVC pipe is also already used in California for potable water pipe and other applications (having been permitted by past legislation). The net effect of adoption of the proposed regulations would probably be an increase in the use of CPVC for potable water conveyance, with a proportionate decrease in the use of other materials.

There is little published data on the extent of CPVC pipe use in California. Currently, CPVC is approved for potable water use in California in mobilehomes, recreational vehicles, commercial modulars, and manufactured homes; and certain jurisdictions have allowed residential CPVC use under Health and Safety Code section 17921.9 prior to its repeal, or pursuant to the Findings Requirement. CPVC pipe also is permitted for residential potable water distribution in the other 49 states. Because there are no permitting or reporting requirements associated with CPVC installation or use, there is no readily accessible regulatory database to document the extent of CPVC use, or the use of other potable water materials. In order to estimate future use of CPVC in California, the Lead Agency requested, and has relied on, data provided by a manufacturer of CPVC resin.

Any projection of possible future conditions, such as the extent of future CPVC use, necessarily entails some degree of speculation, but it is reasonable to assume that if the use of CPVC pipe for potable water piping in residential buildings is approved, then the extent of use in California will be similar to that in places where CPVC is already approved. For the United States and Canada, the residential potable water plumbing market (one half to two-inch diameter pipe) is approximately divided as follows: 30 percent CPVC; 53 percent copper; and 17 percent all other materials. While it is difficult to project future use, if California

follows a similar pattern of usage, then CPVC could account for about 30 percent of the potable water pipe sold in the state.<sup>4</sup>

The physical quantities of CPVC used in the future will vary according to the percent of the relevant market captured by CPVC, the number of residential buildings constructed, the size and other design parameters of the buildings using CPVC, as well as many other factors, all of which will likely vary over time.

## **E. Alternatives**

Four alternative Projects are considered:

### **1) No Project**

Under this alternative, the Lead Agency would recommend that the CBSC make no changes to the plumbing code that relate to CPVC use. This does not mean that CPVC would not be used in California. As noted earlier, CPVC is currently approved for potable water use in certain jurisdictions. Local jurisdictions would still be able to approve CPVC pipe for potable water piping in residential buildings based on local findings related to unique topographic, geographic or climatic conditions or based on the Findings Requirement. The VOC content of CPVC adhesives would vary across the state based on individual air district requirements.

### **2) Do not delete the Findings Requirement, but require the use of Low-VOC cements and primers**

Under this alternative, the Lead Agency would recommend that the CBSC adopt the current CPVC-related regulations, keeping the Findings Requirement in place. Low-VOC CPVC adhesives would be required.

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<sup>4</sup> E-mail from Jeff Cash, Business Director, Americas Plumbing, Noveon, February 23, 2006, (Doc.220).

**3) Delete the Findings Requirement and require Low-VOC cements and primers**

Under this alternative, the Lead Agency would recommend that the CBSC adopt the proposed CPVC-related regulations, which would delete the Findings Requirement and require the use of Low-VOC CPVC adhesives.

**4) Delete the Findings Requirement and do not require Low-VOC cements and primers**

This alternative would cause the Findings Requirement to be deleted from the plumbing code, but would not require the use of Low-VOC cements or primers. The use of CPVC would likely increase. The use of VOC content of CPVC adhesives would vary across the state with the individual air district requirements.

**F. Discussion**

The Lead Agency considers this to be a reasonable range of alternatives that meets the requirements of CEQA. These four alternatives offer decision-makers and the public a basis for meaningful discussion.

Unquestionably, there are materials other than CPVC which are suitable for potable water use and which are not prone to corrosion under certain specified conditions. It is not the intention of the Lead Agency to prevent the use of (or in any way pre-judge) newly developed or existing materials for potable water piping. This EIR does not consider other corrosion-resistant materials because it is meant to evaluate the removal of the Findings Requirement, thus making CPVC more easily available for potable water plumbing in residences throughout the state.

While CEQA requires analysis of alternatives, in this case copper pipe is not an alternative to the project under consideration. The Lead Agency is not approving either copper or CPVC, but instead is assessing the potential impacts of authorizing CPVC use *in addition to the plumbing systems already approved and in use*. The existing installations of copper plumbing systems would remain

in place, with some proportion of new construction and remodeling projects utilizing CPVC plumbing systems. The existing copper systems are more properly considered as an element of the environmental setting.

### **G. Environmental Setting**

The proposed regulations would apply to, and thus could affect, residential construction and repair in all areas of the state. The environmental setting is comprised of the potable water systems of existing residential buildings throughout the State of California. For the majority of existing residential buildings, the interior potable water pipe is made of soldered copper tubing or threaded galvanized iron pipe. CPVC and crosslinked polyethylene (**PEX**) pipe is also used in some residential areas, although to a much smaller degree. Information on the existing environment as it relates to air, water, worker safety, and solid waste is presented in the appropriate sections.

## H. CPVC Express Terms to the Proposed Regulation Change

### CPVC RELATED EXPRESS TERMS FOR PROPOSED BUILDING STANDARDS OF THE DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT REGARDING THE ADOPTION BY REFERENCE OF THE 2006 EDITION OF THE UNIFORM PLUMBING CODE (UPC) WITH PROPOSED AMENDMENTS INTO THE 2007 CALIFORNIA PLUMBING CODE (CPC) CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 5

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#### LEGEND FOR EXPRESS TERMS:

Existing California amendments or code language being modified: All such language appears in *italics*; modified language is underlined or shown in ~~strikeout~~.

New UPC language with new California amendments: UPC language shown in normal Arial 11 point; California amendments to UPC text shown *underlined and in italics*.

3. Repealed text: All such language appears in ~~strikeout~~.

4. Notation: Authority and Reference citations are provided at the end of each chapter.

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#### AMENDMENTS:

##### CHAPTER 2 DEFINITIONS

Adopt entire Chapter 2 as amended.

215.0

**Low-VOC Cement:** *Cement with a volatile organic compound (VOC) content of less than or equal to 490 g/L for CPVC Cement, 510 g/L for PVC Cement, and 325 g/L for ABS Cement, as determined by the South Coast Air Quality Management District's Laboratory Methods of Analysis for Enforcement Samples, Method 316A.*

**Low-VOC Primer:** *Primer with a volatile organic compound (VOC) content of less than or equal to 550 g/L, as determined by the South Coast Air Quality*

Management District's Laboratory Methods of Analysis for Enforcement Samples, Method 316A.

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CHAPTER 3  
GENERAL REGULATIONS

**316.1.6 Solvent Cement Plastic Pipe Joints.** Plastic pipe and fittings designed to be joined by solvent cementing shall comply with appropriate IAPMO Installation Standards.

ABS pipe and fittings shall be cleaned and then joined with solvent cement(s). CPVC pipe and fittings shall be cleaned and then joined with listed primer(s) and solvent cement(s).

Exception: Listed solvent cements that do not require the use of primer shall be permitted for use with CPVC pipe and fittings, manufactured in accordance with ASTM D2846, 1/2 inch through 2 inches in diameter.

PVC pipe and fittings shall be cleaned and joined with primer(s) and solvent cement(s). A solvent cement transition joint between ABS and PVC building drain or building sewer shall be made using a listed transition solvent cement.

For applications listed in 108.2.1 through 108.2.1.3 regulated by the Department of Housing and Community Development, plastic pipe and fittings joined with solvent cement shall utilize Low-VOC primer(s), if a primer is required, and Low-VOC solvent cement(s) as defined in Section 215.

~~**316.1.6.1 [For HCD 1 & HCD 2] Solvent Cement Plastic Pipe Joints.** Plastic pipe and fittings designed to be joined by solvent cementing shall comply with Section 310.4 of this code and an approved nationally recognized installation standard listed in Table 14-1.~~

~~ABS pipe and fittings shall be cleaned and then joined with listed solvent cement(s).~~

~~CPVC and PVC pipe and fittings shall be cleaned and joined with listed primer(s) and solvent cement(s).~~

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CHAPTER 6  
Water Supply and Distribution

~~**604.1.1 [For HCD 1 & HCD 2]** Water distribution pipe, building supply water pipe and fittings shall be of brass, copper, cast iron, galvanized malleable iron, galvanized wrought iron, galvanized steel, or other approved materials. Asbestos-cement, CPVC, PE or PVC, water pipe manufactured to recognized standards may be used for cold water distribution systems outside a building except as provided for CPVC use pursuant to Section 604.1.2. All materials used in the water supply system, except valves and similar devices shall be of a like material, except where otherwise approved by the Administrative Authority.~~

**Section 604.1.12 [HCD 1] Local Authority to Approve CPVC Pipe Within Residential Buildings Under Specified Conditions**

~~For applications listed in 108.2.1.1 through 108.2.1.3 regulated by the Department of Housing and Community Development, † the local responsible building official of any city, county, or city and county, in accordance with the procedures set forth in Chapter 3, (with the exception of Section 301.2.7) may shall authorize by permit the use of CPVC for hot and cold water distribution systems within the interior of residential buildings provided all of the following conditions are satisfied:~~

~~**(a) Finding Required.** The building official shall first make a determination that there is or will be the premature failure of metallic pipe if installed in such residential buildings due to existing water or soil conditions.~~

**(a)(b) Permit Conditions.** Any building permit issued pursuant to ~~this~~ Section 604.1.1 shall be conditioned on compliance with the mitigation measures set forth in this Section.

**(b)(e) Approved Materials.** Only CPVC plumbing material listed as an approved material ~~in~~, and installed in accordance with this code may be used.

**(c)(d) Installation and Use.** Any installation and use of CPVC plumbing material pursuant to this Section shall comply with all applicable requirements of this code and Section 1.2 of Appendix I of this code, Installation Standard for CPVC Solvent Cemented Hot and Cold Water Distributions Systems, IAPMO ~~IS-20-98~~ IS 20-2005.

**(d)(e) Certification of Compliance.** Prior to issuing a building permit pursuant to ~~this~~ Section 604.1.1, the building official shall require as part of the permitting process that the contractor, or the appropriate plumbing subcontractors, provide written certification: (1) that is required in subdivision (e)(f); and (2) that he or she will comply with the flushing procedures and worker safety measures set forth in Section 1.2 of Appendix I of this code, Installation Standard for CPVC Solvent Cemented Hot and Cold Water Distribution Systems, IAPMO ~~IS-20-98~~ IS 20-2005.

**(e)(f) Worker Safety.** Any contractor applying for a building permit that includes the use of CPVC plumbing materials authorized pursuant to this Section shall include in the permit application a signed written certification stating that:;

- (1) They are aware of the health and safety hazards associated with CPVC plumbing installations.
- (2) They have included in their Illness and Injury Prevention Plan the hazards associated with CPVC plumbing pipe installations; and
- (3) The worker safety training elements of their Injury and Illness Prevention Plan meets the Department of Industrial Relations' guidelines.

***(f)(g) Findings of Compliance.*** *The building official shall not give final permit approval of any CPVC plumbing materials installed pursuant to ~~this~~ Section 604.1.1 unless he or she finds that the material has been installed in compliance with the requirements of this code and that the installer has complied with the requirements in Section ~~304.0.1~~ 1.2.1, of Appendix I of this code, Installation Standards for CPVC Solvent Cemented Hot and Cold Water Distribution Systems, IAPMO ~~IS-20-98~~ IS 20-2005.*

***(g)(h) Penalties.*** *Any contractor or subcontractor found to have failed to comply with the ventilation, glove or flushing requirements of Section ~~304.0~~ 1.2.2 of Appendix I of this code, Installation Standards for CPVC Solvent Cemented Hot and Cold Water Distribution Systems, IAPMO ~~IS-20-98~~ IS 20-2005 shall be subject to the penalties in Health and Safety Code, Division 13, Part 1.5, Chapter 6 (Section 17995 et seq.). In addition, if during the conduct of any building inspection the building official finds that the ventilation and glove requirements of Section ~~304.0~~ 1.2.2 of Appendix I of this code, “Special Requirements for CPVC Installation within Residential Buildings”, are being violated, such buildings officials shall cite the contractor or subcontractor for that violation.*

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APPENDIX I  
INSTALLATION STANDARDS

Adopt entire Appendix I as amended.

**INSTALLATION STANDARD  
FOR  
CPVC SOLVENT CEMENTED HOT AND COLD WATER DISTRIBUTION  
SYSTEMS  
IAPMO IS 20-2003 2005**

*~~Section 301.0 Special Requirements for CPVC Installation Within Residential Buildings Only. [HCD 1]~~*

**1.2 Special Requirements for CPVC Installation within Residential Structures.**

*In addition to the other requirements in the California Plumbing Code and this Appendix for the ~~Installation Standards for~~ installation of CPVC Solvent Cemented Hot and Cold Water Distributions Systems, all installations of CPVC pipe within residential structures shall meet the following:*

**~~301.0.1~~ 1.2.1 Flushing Procedures. ~~301.0.1.1~~ All installations of CPVC pipe within residential structures shall be flushed twice over a period of at least one (1) week. The pipe system shall be first flushed for at least 10 minutes and then filled and allowed to stand for no less than 1 week, after which all the branches of the pipe system must be flushed long enough to fully empty the contained volume. At the time of the fill, each fixture shall have a removable tag applied stating:**

*“This new plumbing system was first filled on (date) by (name). The California Department of Housing and Community Development requires that the system*

*be flushed after standing at least one week after the fill date specified above. If the system is used earlier than one week after the fill date, the water must be allowed to run for at least two minutes prior to use for human consumption. This tag may not be removed prior to flushing, except by the homeowner."***301-0.2**

**1.2.2 Worker Safety Measures. 301-0.2.1** *Mechanical ventilation sufficient to maintain exposures below the relevant exposure limits established by state regulations shall be provided in enclosed spaces. This ventilation shall be directed at the breathing zone of the worker installing the pipe. Where mechanical ventilation is not practical, respirators, suitable for organic vapors, shall be used. For the purpose of this subdivision, an enclosed space is defined as:*

- (a) A space less than 100 square feet of floor area under a ceiling with a height of 10 feet or less, and which does not have openings (consisting of doors, windows, or unfinished walls) on at least two sides;*
- (b) Crawl spaces having a height of less than three feet;*
- (c) Enclosed attics that have a roof and ceiling; or*
- (d) Trenches having a depth greater than ~~twenty-four~~ 24 inches.*

**301-0.2.2** *Installers of ~~CPCG~~ CPVC pipe within residential structures shall use non-latex thin gauge (4 millimeters) nitrile gloves, or other gloves providing an equivalent or better degree of protection during the installation of the CPVC plumbing system. Gloves shall be provided to all workers by the contractor, or plumbing subcontractor, and shall be replaced upon contamination by cements.*

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## **Chapter 3: Air Quality**

### **A. Introduction**

This section describes the existing air quality in California, the processes that affect air quality, and the regulatory framework under which air pollutant emissions are controlled. This section also evaluates the potential effects of the project on local and regional air quality.

The installation and repair of CPVC pipe requires either the use of one-step cement (no primer needed) or cement and a primer (collectively “**Adhesives**”). There are potential significant environmental impacts related to evaporation of solvents from Adhesives. Areas of concern include exposure of pipe installers to Adhesives and the effect that evaporated solvents might have as smog precursors. Pipe worker exposure is discussed in Chapter 5: Worker Safety.

### **B. Environmental Setting**

1. Overview. California’s climate varies from Mediterranean, to steppe, to alpine, to desert. The Cascade and Sierra Nevada Ranges act as barriers to the passage of air masses. Because of these barriers, and California’s western border of the Pacific Ocean, summer weather in portions of the State is generally milder than that in the rest of the country and is characterized by dry, sunny conditions with infrequent rainfall. In winter, the same mountain ranges prevent cold, dry air masses from moving into the State from the central areas of the United States. Consequently, winters in California are also milder than would be expected at these latitudes. The mountains also tend to trap air and limit pollutant dispersion.

The ambient air quality in a given area depends on the quantities of pollutants emitted within the area, transport of pollutants to and from surrounding areas, local and regional meteorological conditions, as well as the surrounding topography of the area. Air quality is described by the concentration of various pollutants in the atmosphere. Units of concentration are generally expressed in

parts per million (**ppm**) or micrograms per cubic meter (**µg/m<sup>3</sup>**). Air basins monitor criteria pollutants continuously at stations located throughout their territories.

2. Air Pollutants. There are seven categories of air pollutants that are of major concern in California: lead, nitrogen oxides, sulfur oxides, carbon monoxide, hydrogen sulfide, particulate matter, and photochemical smog (ground level ozone – O<sub>3</sub>). Of these pollutants, only ozone is a concern for this Project. There is no reason to expect the Project to have an impact on lead, nitrogen oxides, sulfur oxides, carbon monoxide, or hydrogen sulfide levels. Particulate matter is not a concern as discussed below.

3. Particulate Matter. Particulate matter (**PM**) in the air can aggravate a number of respiratory illnesses. All particles with a diameter of 10 microns or smaller (**PM<sub>10</sub>**) are considered to be harmful.<sup>5</sup> PM<sub>10</sub> is a mixture of substances that includes elements such as nitrates, sulfates, and organic compounds; and complex mixtures such as diesel exhaust and soil. These substances may occur as solid particles or liquid droplets. Some particles are emitted directly into the atmosphere. Others, referred to as secondary particles, result from gases that are transformed into particles through physical and chemical processes in the atmosphere.

Although certain volatile organic compounds (**VOC**) have been known to contribute to PM generation, this phenomenon is limited to VOCs with at least seven carbon atoms.<sup>6</sup> Tetrahydrofuran, methyl ethyl ketone, acetone, and cyclohexanone are the VOCs present in CPVC Adhesives. They contain four, four, three, and six carbon atoms, respectively. The compounds present in the Adhesives used for CPVC installation are not likely to form particulate matter and this issue will not be further analyzed.

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<sup>5</sup> The California Almanac of Emissions and Air Quality, page 18, Air Resources Board 2006 (Doc.198)

<sup>6</sup> Initial Statement of Reasons for the Proposed Amendments to the California Aerosol Coating Products, Antiperspirants and Deodorants, and Consumer Products Regulations, Test Method 310, and Airborne Toxic Control Measure for Para-dichlorobenzene Solid Air Fresheners and Toilet/Urinal Care Products, Air Resources Board, May 7, 2004 (Doc.176)

Figure 1: California Counties



Figure 2: California Air Basins



Figure 3: California Air Districts

# California Air Districts



4. Ozone. Ozone is a respiratory irritant that increases susceptibility to respiratory infections. Ozone is also an oxidant and can cause substantial damage to vegetation and other materials. Ground-level ozone is the principal component of smog. Ozone is not emitted directly into the atmosphere. It is created by the reaction of ozone precursors -- reactive organic gases (**ROGs**) and nitrogen oxides. Because it requires sunlight to form, it is known as photochemical smog. Ozone levels are usually highest during days in the late spring through summer when weather conditions are favorable for the photochemical reactions to occur (clear warm days and light winds).

CPVC Adhesives contain the volatile organic compounds (**VOCs**): acetone, tetrahydrofuran, methyl ethyl ketone, and cyclohexanone. VOCs readily evaporate, but do not necessarily react with other chemicals to form smog. For example, although acetone is a VOC, it is not considered an ROG because it has a low reactivity with other compounds.<sup>7</sup> In contrast, tetrahydrofuran, methyl ethyl ketone, and cyclohexanone are regulated as ozone precursors because they are VOCs that are highly reactive with other chemicals and thus contribute to smog. The Air Resources Board (**ARB**) uses the terms “ROG” and “VOC” almost interchangeably.

5. Background Reactive Organic Gases.

ROGs occur naturally in terrestrial, marine, and aquatic ecosystems. Natural emissions are strongly affected by seasonal influences on factors such as temperature and moisture conditions or wind regimes. Emissions can fluctuate greatly from year-to-year due to variation in meteorology or land cover/land use. There are three broad categories of Natural Source-derived ROGs for which data were available: geogenic, biogenic, and wildfires.

Geogenic sources of ROGs include petroleum gas and oil seeps which occur naturally in California. Oil and gas seeps form where oil or natural gas emerge from subsurface sources to the ground or water surface. Seeps are associated with water springs in which oil floats to the surface of the water, and

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<sup>7</sup> The California Almanac of Emissions and Air Quality, Air Resources Board 2006 (Doc.198)

gas bubbles out into the atmosphere. Terrestrial seep flows vary with the seasons, with elevated flows occurring during warm weather. Seismic activity can create new seeps or cause increased flows from existing seeps. Major marine seeps are located off the coast of Santa Barbara County. Other seeps occur in regions of oil and gas production throughout the state.

Biogenic volatile organic compounds (**BVOCs**) are emitted into the atmosphere from terrestrial ecosystems such as vegetation. Plant BVOC emissions vary by compound and by orders of magnitude among various plant species. BVOC emissions are strongly influenced by environmental factors such as temperature and sunlight. The majority of biogenic emissions are produced during the ozone season (May through October).<sup>8</sup>

Wildfires are natural events that burn a variety of vegetation types and thereby contribute ROG. This wildfire category does not include prescribed fires such as agriculture burning, forest management fires, or Wildland Fire Use. A prescribed burn is a fire ignited by a planned management action. Wildland Fire Use is a naturally ignited lightning fire that is managed for resources benefit. Wildfires can vary drastically from year to year; an area may have extreme wildfire behavior one year, but none the following year.

Natural Source ROG emissions are estimated by ARB for both Air Basins and Counties. Table 9 in Appendix A shows a county-by-county listing of Natural Source ROG by category. The numbers are presented as units of “tons-per-day.” A total of 2067 tons per day are emitted statewide by biogenic sources of ROG. California’s diverse range of environmental settings produces a corresponding range of emission profiles. The Mojave area of Riverside County, for example, has zero Natural Source ROG emissions, while Shasta County, a heavily forested area, is estimated to emit 166 tons per day.

### **C. Regulatory Setting**

1. Introduction. California is divided into 58 counties, 35 air districts, and 15 air basins (See Figures 1, 2, and 3). The confluence of basins, districts, and

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<sup>8</sup> The California Almanac of Emissions and Air Quality, Air Resources Board, 2006 (Doc.198)

counties makes it difficult to describe California’s air quality or air quality standards in a general manner. Air district and basin boundaries do not follow political boundaries. It is possible for one county to be in two air districts and two air basins. Air basins generally have similar geographic and meteorological features, and air basins are often referred to when discussing air quality. However, it is the air districts that adopt control regulations. Appendix A contains several tables that show the relationships between the basins, districts, and counties (See Appendix A, Tables 5 – 8).

2. Federal Regulatory Environment. The Federal Clean Air Act establishes National Ambient Air Quality Standards (**NAAQS**) for criteria pollutants. If an area does not meet the NAAQS over a three year time period, the United States Environmental Protection Agency (**EPA**) designates it as a “nonattainment” area for that particular pollutant. Federal ozone standards have been set for an 8-hour averaging time.

3. California Regulatory Environment. The California Clean Air Act of 1988 outlines a program for areas of the state to attain the California Ambient Air Quality Standards (**California Standards**) by the earliest practical date. If an area does not meet the California Standards, it is designated as a State Nonattainment area. California ozone standards have been set for 1-hour and 8-hour averaging times.

**Table 1: Ambient Air Quality Standards for Ozone**

	<b>Averaging Time</b>	<b>Standard</b>
<b>State</b>	1 Hour	0.09 ppm (180 µg/m <sup>3</sup> )
	8 Hour	0.07 ppm (137 µg/m <sup>3</sup> )
<b>National</b>	1 hour	--
	8 Hour	0.08 ppm (157 µg/m <sup>3</sup> )

The Air Resources Board (**ARB**) sets and enforces emission standards for motor vehicles, fuels, and consumer products; sets health-based air quality standards; conducts research; monitors air quality; identifies and sets control measures for toxic air contaminants; and oversees and assists local air quality districts.

Federal clean air laws require nonattainment areas to develop plans, known as State Implementation Plans (**SIPs**). A SIP describes how an area plans to meet the national ambient air quality standards (**NAAQS**). State law makes ARB the lead agency for all purposes related to the SIPs. Local air districts prepare their individual SIP elements and submit them to ARB for review and approval. ARB then forwards SIP revisions to the EPA for approval and subsequent publication in the Federal Register.

4. Local Air Quality Regulatory Environment. The ARB has delegated much of its non-vehicular air pollution control authority to local air pollution control districts and air quality management districts. For some air basins covering more than one county, a unified air district has been formed to manage air quality issues throughout the basin. In other multi-county air basins, individual county air districts manage air quality only within their county.

Air quality management plans are designed to bring an area into compliance for those pollutants that it is classified as being in nonattainment and usually contain an emissions inventory and a list of rules proposed for adoption.

5. Regulating Emissions from Adhesives. Many California air basins are in nonattainment status for the State and Federal ozone standards (see Figures 4, 5, & 6 in Appendix A). Many of these air basins are comprised, at least in part, of air districts that have adopted ROG rules covering adhesives, among other things, in an effort to control ozone. These local ROG emission regulations (**ROG Rules**) are included in the SIP and local air quality plans. These rules have been accepted by the EPA as an approved strategy to attain air quality standards and to prevent projected air quality standard violations. The rules are legally enforceable standards designed to mitigate the impact of ROG emissions

from such things as CPVC Adhesives. Table 4 in Appendix A shows the air districts' CPVC Adhesive rules.

Many of the local air districts' ROG Rules have exemptions that may apply to CPVC Adhesives (e.g., exemption of Adhesives that are in containers of 16 ounces or less). The Project is a proposed change in the California Plumbing Code. As part of that change, the California Plumbing Code will impose a maximum limit on VOC content for CPVC cements and primers without exemptions. Local air district rules with exemptions for container size would not preempt the Plumbing Code. Thus, these exemptions are not significant for this EIR.

The Lead Agency has given great consideration to VOC limits in its proposed amendments to the CPC. ARB has determined that the Reasonable Available Control Technology (**RACT**) for VOCs in adhesives, including the cements and primers used to join CPVC pipe for potable water piping in residential buildings, is 490 g/L for cement and 650 g/L for primer.<sup>9</sup> This is the standard imposed by most air districts with ROG rules. The ARB RACT determination was made in 1998. There are, however, currently several brands of CPVC primer on the market with a 550 g/L VOC content limit. The Lead Agency is confident that the lower limit of 550 g/L VOC content for primer is easily achievable and would not pose undue hardship. For this reason, the proposed code change imposes the ARB RACT VOC limit of 490 g/L for cement and the lower 550 g/L for primer.

It is noteworthy that a few air districts have VOC limits that are lower than both the ARB RACT limits and the proposed code limits. The state standards would not preempt these more restrictive local air district standards. However, for these air districts, it is likely that CPVC installation will be impractical because there are no adhesives on the market that meet the standards. However, as a precautionary measure, this EIR has included those counties located in districts with more stringent standards in the Project emissions calculations while using

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<sup>9</sup> Determination of Reasonably Available Control Technology and Best Available Retrofit Control Technology for Adhesives and Sealants, Air Resources Board, 1998 (Doc.182)

the higher limits proposed to be included in the California Plumbing Code. The use of the higher limits results in artificially increased estimated emissions calculated for the Project in those particular air districts with lower limits.

6. Toxic Air Contaminants. The California Toxic Air Contaminant Identification and Control Program is designed to protect public health by reducing emissions of toxic air contaminants (**TACs**) that pose the highest risks. The general goal of this program is to reduce public exposure to non-carcinogens to levels below which they will not cause or contribute to adverse health effects, and to minimize exposure to carcinogens to the maximum extent feasible.

California Health and Safety Code section 39655 defines a TAC as an air pollutant which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health. Included in the definition are substances that were listed as Hazardous Air Pollutants (**HAPs**) in Section 112 of the federal Clean Air Act (42 U.S.C. §7412) because in 1993, the California Legislature amended the program by requiring the ARB to identify the 189 federal HAPs as TACs.<sup>10</sup> The intent of the amendment was to save the state the time and expense of individually identifying each of the 189 HAPs as TACs, in recognition of the fact that the Congress and EPA have already conducted an extensive process to evaluate and identify these substances.<sup>11</sup> Among those chemicals that were listed as HAPs in 1993 was methyl ethyl ketone (**MEK**). MEK is found in the Adhesives (primer and cement) used in CPVC installation.

The EPA has recently taken methyl ethyl ketone off of the HAP list in response to a petition by the Ketones Panel of the American Chemistry Council on behalf of MEK producers and consumers. The EPA made a determination pursuant to the Clean Air Act (42 U.S.C. §112(b)(3)(C)) that there are “adequate data on the health and environmental effects [of MEK] to determine that

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<sup>10</sup> California Health and Safety Code section 39657(b) as modified April 8, 1993 (Title 17, California Code of Regulations, section 93001).

<sup>11</sup> Final Staff Report: Update to the Toxic Air Contaminant List, Air Resources Board, December 1999 (Doc.212)

emissions, ambient concentrations, bioaccumulation, or deposition of the substance may not reasonably be anticipated to cause adverse effects to human health or adverse environmental effects.”<sup>12</sup> This is a significant determination. The EPA will not grant a petition to delete a substance if there are major uncertainties that need to be addressed before EPA would have sufficient information to make the requisite determination.

This does not mean that the EPA determined that there was absolute certainty that MEK would not cause adverse effects on human health or the environment. Rather, EPA weighed the potential uncertainties and their likely significance and found that it was appropriate to remove MEK from the HAP list. The EPA issued a proposed rule to delete MEK from the HAP list on March 20, 2003. The EPA received and responded to public comments on the proposed rule. On December 19, 2005, the EPA published the final rule which amended section 112 of the Clean Air Act by removing MEK from the list of HAPs.

California has not removed MEK from its list of toxic air contaminants (**TACs**). ARB does not currently have plans to remove it from the list; however MEK will be further evaluated as part of ARB’s ongoing TAC list update process, which may be completed by the end of 2006.<sup>13</sup> Methyl ethyl ketone as a toxic air contaminant will be reviewed further in the worker safety section (4-F).

#### **D. Ambient Non-Natural ROG Emissions**

Appendix A, Table 10 contains a county-by-county breakdown of current non-natural ROG emissions from all sources in tons per day, commencing in 1975 and projected out to the year 2020 (in 5 year increments).<sup>14</sup> The last reported year is 2005 and thus, the first projected year is 2010. What is remarkable in this table is the magnitude of daily non-natural ROG emissions, even in remote rural counties. For example, in Modoc County, there is an

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<sup>12</sup> Federal Register Vol. 70, No 242, December 19, 2005, 75047 (Doc.154)

<sup>13</sup> Email from Jim Aguila, Manager, Substance Evaluation Section, California Air Resources Board, March 30, 2006 (Doc.216)

<sup>14</sup> The California Almanac of Emissions and Air Quality, ARB 2006 (Doc.198)

average of four tons (8,000 pounds) of non-natural ROGs emitted each day. In the heavily urbanized area of San Bernardino, an average of 39 tons (78,000 pounds) of ROG was emitted daily in 2005.

## **E. Assumptions and Calculations**

### **1. Housing Unit Construction and CPVC Use Assumptions.**

As mentioned previously, the EIR Project is a change in the California Plumbing Code. Thus, there are no direct environmental impacts from the Project. Indirect impacts would occur due to the actions of individuals taken in response to the Project. There is no way of knowing the exact number and types of actions that will be taken if the code is changed. Therefore, assumptions are required to calculate estimated individual responses.

The following are the assumptions used by the Lead Agency to estimate the usage of CPVC pipe for residential construction if the Project were to be approved.

Assumption: The relative proportion of single family and multifamily units that would be constructed within all counties of the state, following adoption of the code change proposal, would be equal to the percentage of single family and multifamily average percentage of units constructed for the preceding three years (2003, 2004, and 2005). Use of a three-year average helps to smooth out the typical boom and bust cycles of residential construction in California. It is beyond the scope of this EIR to attempt to incorporate any more sophisticated population or construction forecasts.

Assumption: Each county will have the same percentage of the state's total housing units and single family and multifamily units as its average in the preceding three years.

Assumption: There will be 100,000 units re-piped with CPVC pipe<sup>15</sup> in the year the code change is adopted. It is further assumed that the percentage of re-pipings of single family and multifamily units will track the percentage of single

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<sup>15</sup> The only information the Lead Agency has on the estimated volume of re-piping using CPVC comes from the California Building Industry Association.

family and multifamily units that will be re-piped will track the respective percentages of single family and multifamily units which make up the total number of new residential units. There is, however, no independent published basis for this assumption. Anecdotally, the Lead Agency is aware that each year, many homes throughout California are re-piped due to various types of failures of metallic pipe (e.g., bursting pipes due to freezing, failure due to aggressive water or soil conditions, etc...). It is assumed that given a choice between metallic pipe and CPVC pipe, some consumers will choose to re-pipe with CPVC.

Assumption: According to industry sources, CPVC plastic plumbing pipe has an approximately 30 percent share of the nation's market for potable water plumbing.<sup>16</sup> It is assumed that, were the Project to be approved, after some period of time when the market matures, CPVC would claim the same share of California's potable water plumbing pipe market. This EIR assumes market maturity immediately. Again, independent published information is not available to support this assumption.

## 2. Housing Unit Construction and CPVC Usage Calculations:

The following method was used to determine the number of units that might reasonably be plumbed with CPVC in 2007, the year that the Project-induced revisions to the CPC would be approved. Alameda County is used as an example and that data is italicized. The data for all counties is displayed in Appendix A, Table 12.

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<sup>16</sup> Email from Jeff Cash, Business Director, Americas Plumbing, Noveon, February 23, 2006 (Doc.220)

Given the county-level housing building permit numbers from the years 2003-2005 for single family (**SF**) units and multifamily (**MF**) units, calculate the average for each county.<sup>17</sup>

$$SF \text{ Units: } (2,087 + 2,269 + 1,518) \div 3 = 1,958$$

$$MF \text{ Units: } (2,433 + 3,422 + 2,898) \div 3 = 2,918$$

Given the total statewide number of building permits for the years 2003 – 2005, calculate the average.<sup>18</sup>

$$\text{Total CA Units: } (195,682 + 212,960 + 208,972) \div 3 = 205,871$$

Determine what percentage of the total average CA housing units were in each county as SF and MF units: divide the individual county three year average SF and MF units by the total state three year average and multiply by 100.

$$SF \text{ Units: } (1,518 \div 205,871) \times 100 = 0.95\%$$

$$MF \text{ Units: } (2,918 \div 205,871) \times 100 = 1.42\%$$

Given: 180,700 units estimated to be built in California in 2007.<sup>19</sup>

Given: 100,000 units estimated to be re-piped each year.<sup>20</sup>

Assume that the 100,000 re-pipes are distributed throughout the counties in the same manner as the three-year average percentage of SF and MF units built in 2003-2005.

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<sup>17</sup> California Statistical Abstract, Table I-6, January 2006 (Doc.195) and 2005 data from the Department of Housing and Community Development's Housing Policy Development Division. See Table 11.

<sup>18</sup> Data supplied by the Department of Housing and Community Development's Housing Policy Development Division. See Table 11.

<sup>19</sup> Data supplied by the Department of Housing and Community Development's Housing Policy Development Division (Doc.226)

<sup>20</sup> Email from Robert Raymer, Technical Director, California Building Industry Association, March 22, 2006 (Doc.219)

Assume the housing permits for 2007 are distributed throughout the counties in the same manner as the three-year average percentage of SF and MF units built in 2003-2005.

Determine the percentage of SF and MF units estimated to be built in 2007.

Statewide:  $180,700 + 100,000 = 280,700$  total units to be plumbed (new + re-pipes).

Multiply the total units plumbed by the percentage of SF units and repeat for MF units.

$$280,700 \times 0.0095 = 2,667 \text{ SF Units}$$

$$280,700 \times 0.0142 = 3,986 \text{ MF Units}$$

To make these calculations easier to understand, the percentage of units has been rounded off. Unfortunately, this leads to calculation errors. Due to rounding errors, the numbers displayed above are slightly higher than the numbers as shown on Table 12.

The correct numbers at this step are:

$$2,670 \text{ SF Units}$$

$$3,978 \text{ MF Units}$$

These "correct" numbers will be used for the rest of the calculation examples.

Assume CPVC has about 30 percent of the US market for potable water plumbing.<sup>21</sup> This is a mature market number. The initial market share will probably be much lower. Once it is mature, the California market share is not expected to significantly increase or decrease above 30 percent.

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<sup>21</sup> Email from Jeff Cash, Business Director – Americas Plumbing, Noveon, February 23, 2006, (Doc.220)

Determine the number of SF and MF units reasonably be expected to be plumbed with CPVC if the project is approved.

Multiply the county SF units to be plumbed by 0.30; repeat for MF units.

$$2,670 \times 0.30 = 801 \text{ SF CPVC Units}$$

$$3,978 \times 0.30 = 1,193 \text{ MF CPVC Units}$$

### 3. Volatile Organic Compound Calculations

The following method was used to determine the amount of VOC that probably would be emitted if the estimated number of units were plumbed with CPVC. Alameda County is used as an example and that data is italicized. The data for all counties is displayed in Appendix A, Table 14.

To make these calculations easier to understand, the numbers have been rounded off. Unfortunately, this leads to calculation errors. Due to rounding errors, the numbers displayed for the example may be different from the numbers as shown on Table 14.

Determine the amount in liters (L) of primer and cement to be used annually in each county for CPVC plumbing.

Given: 0.270 L of primer and 0.810 L of cement used for each SF unit <sup>22</sup>  
 0.110 L of primer and 0.420 L of cement used for each MF unit

Multiply the number of SF and MF units estimated to be plumbed with CPVC each year in each county by the amount of primer estimated to be used for each type of unit. Add the amount of primer used for each type of unit together. Repeat calculations inserting cement values to determine the volume of cement used per year.

$$(801 \times 0.270 \text{ L}) + (1,193 \times 0.110 \text{ L}) =$$

*348 L primer per year in Alameda County*

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<sup>22</sup> Adhesive volumes were calculated by using the E-Z Weld Calc tool found at: <http://members.aol.com/ezweld/ezcalc.html>. Raw data on the number and size of fittings to be used was obtained from licensed professional plumbers and industry stakeholders. While sources estimated different amounts of cement and primer, the lead agency decided to use the E-Z weld calc tool with the numbers and sizes of fittings that were obtained from the sources because the tool makes calculations based on data averaged from many solvent cement industry sources and thus would better represent an average user. See Table 13. (Doc.221)

$$(801 \times 0.810 \text{ L}) + (1,193 \times 0.420 \text{ L}) = 1,150 \text{ L cement per year in Alameda County}$$

Given: 550 g VOC per liter (L) of primer<sup>23</sup>  
 490 g VOC per liter (L) of cement

Assume 100% of the VOCs in the cement and primer used for installation are emitted.

Determine the grams (g) of VOC emitted each year from CPVC Adhesives for each county.

$$348 \text{ L} \times (550\text{g/L}) = 191,400 \text{ g VOC from Primer}$$

$$1,150 \text{ L} \times (490 \text{ g/L}) = 563,500 \text{ g VOC from Cement}$$

$$191,400 + 563,500 = 754,900 \text{ g VOC per year for Alameda County}$$

Due to rounding errors, the correct number should be 754,629 g VOC per year for Alameda County. This “correct” number will be used for the rest of the calculation examples.

Convert grams to pounds

$$754,629 \text{ g} \times 0.002205 \text{ lbs/g} = 1,663.67 \text{ lbs per year VOC}$$

Determine pounds of VOC per construction working day (250 days per year)

$$1,663.67 \div 250 = 6.65 \text{ lbs/working day in Alameda County}$$

Determine pounds of VOC per standard day (365 days per year)<sup>24</sup>

$$1,663.67 \div 365 = 4.56 \text{ lbs/day in Alameda County}$$

<sup>23</sup> The current proposed revisions to the CPC require the use of Low-VOC Adhesives. These are defined as less than or equal to 490 g/L VOC for CPVC cement and less than or equal to 550 g/L VOC for CPVC primer. See Chapter 2, Section H for express language.

<sup>24</sup> This data is displayed in Appendix A, Table 15, “2007 VOC Comparisons.”

#### 4. Future Housing Projections

The above calculations incorporated an estimate of the number of houses that will be built in 2007, the year the proposed code change would become effective if adopted. To reasonably forecast the impacts of the project in the foreseeable future, an analysis of past and predicted future building permits issued is necessary. Total housing permits issued for the state of California for the years 1970 – 2005 and the projected numbers of permits to be issued for 2006 – 2008<sup>25</sup> were averaged and the standard deviation was calculated. This data is displayed in Appendix A, Table 17.

It is expected that 95 percent of the permits will be within two standard deviations of the mean. This is called a 95% confidence interval for the data. About 68 percent of the permits will be within one standard deviation of the mean. This is called a 68% confidence interval for the data. Calculating the 95% and 68% confidence intervals gives a reasonable estimation of future housing permit issuance. This provides a range with a high limit (average plus standard deviation) and a low limit (average minus standard deviation) for each confidence interval.

Future housing permit issuance will usually fall within the 68% confidence interval range and the Lead Agency analyzed possible Project VOC emissions assuming the “average plus one standard deviation” upper limit (“**+1 STDEV**”). For a complete picture of the possible Project future outcomes, the Lead Agency also analyzed Project VOC emissions assuming the “average plus two standard deviation” (“**+2 STDEV**”) upper limit. A graph is provided for illustration (see Appendix A, Figure 8).

Using the average, +1 STDEV, and +2 STDEV permit numbers, the calculations and assumptions used to determine Project VOC emissions for the year 2007 were repeated to determine the Project emissions for these new projected future housing permit totals. Appendix A, Tables 18 – 20 contain data

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<sup>25</sup> Data supplied by the Department of Housing and Community Development's Housing Policy Development Division. See Table 16

for the average permits, Tables 21 - 23 contain data for the average permits +1 STDEV, and Tables 24 – 26 contain data for the average permits +2 STDEV. A Table of compiled predicted Project VOC effects at the estimated 2007, average, average +1 STDEV, and average +2 STDEV permit levels can be found in Appendix A, Table 27.

## **F. Discussion**

One method of determining the significance of pollutant emissions is to compare the estimated pollutant concentration to an appropriate state or federal ambient air quality standard. These standards represent the allowable pollutant concentrations, and are set to ensure that the public health and safety are protected, while including a reasonable margin of safety to protect the more sensitive individuals in the population.

Some, but not all, of the local air districts have developed CEQA guidelines that establish significance thresholds for evaluating new projects and their air quality impacts. Significance thresholds for project-related emissions typically are divided into construction and operational values. Construction values generally are for short-term emissions that occur during the construction of a project. Operational emissions occur after construction is completed and structures are occupied. Operational values are generally for land use development projects that would result in permanent year-round (365 days), long-term emissions.

As mentioned previously, the EIR project is a code change; it is not a site-specific “bricks and mortar” project. Although VOCs will be released during construction which takes place pursuant to the code change, these releases are of short-term duration. Since VOC emissions will not be long-term, local air district significance thresholds for operational values are inappropriate for this Project.

Likewise, use of construction values is inappropriate for this Project. For new housing developments, a builder would primarily use either metallic pipe or CPVC pipe. It is not likely that some houses in a subdivision would be plumbed

with metallic pipe while others were plumbed with CPVC. As noted above, it is assumed that CPVC pipe, if permitted, would represent about 30 percent of the market share for residential potable water plumbing pipe when the market matures. Consequently, it may be assumed that 30 percent of the new units constructed within a given county would be plumbed with CPVC. Approximately one third of the projected CPVC plumbing installations will be due to re-piping. Pipe replacements are likely to be widely distributed, not grouped together in a "project." For those CPVC units that are grouped together within a subdivision, the Lead Agency has no empirical basis for determining how many of these units would be constructed in a specific subdivision. Moreover, construction thresholds are meant to incorporate the entire construction project's generation of VOCs. This includes VOCs from diesel engines, architectural adhesives, and many other construction activities. The VOCs generated from CPVC pipe installation would be only one part of the construction project calculations. It is not reasonable for the Lead Agency to assume that all estimated CPVC plumbing installations within a county on a particular day would be part of a single construction project.

The Lead Agency declines to establish levels of significance based on local air district construction or operational values. However, for reference purposes only, the estimated 2007 county daily emissions from CPVC pipe installation have been displayed with the appropriate air district's operational threshold of significance in Appendix A, Table 15. The VOC emissions projected to occur within a county due to the change in the plumbing code range from 0.03 lbs/working day to 59.3 lbs/ working day depending on the number of units projected to be built within that particular county. These numbers are well below the background Natural Source ROG emissions that are given in terms of tons per day.

Another purely illustrative comparison is provided by the VOCs from consumer products. In 1997, the California Air Resources Board issued an Initial Statement of Reasons (**ISOR**) for proposed amendments to the California

Consumer Products regulations.<sup>26</sup> Within this document, data was presented that showed the daily emissions and expected reductions after the regulations took effect for several consumer product categories. The ISOR showed that the use of hair mousse resulted in statewide emissions of 0.76 tons/day. The expected decrease after the regulations took effect was 0.33 tons/day for a new expected daily emission of 0.43 tons/day ( $0.76 - 0.33 = 0.43$ ). This is approximately 860 lbs/day based on a 365-day year. By contrast, the project is expected to result in statewide emissions of 347.3 lbs/day based on a 250-day year. Adjusting the mousse data to a construction year shows that hair mousse VOC emissions would be about 1,255.6 lbs/day ( $(860 \text{ lbs/day} \times 365 \text{ days}) \div 250 \text{ days} = 1,255.6 \text{ lbs/day}$ ). While adjusting the Project emissions to a calendar year shows that statewide Project emissions in 2007 would be only about 237.9 lbs/day.<sup>27</sup>

### Future Emissions

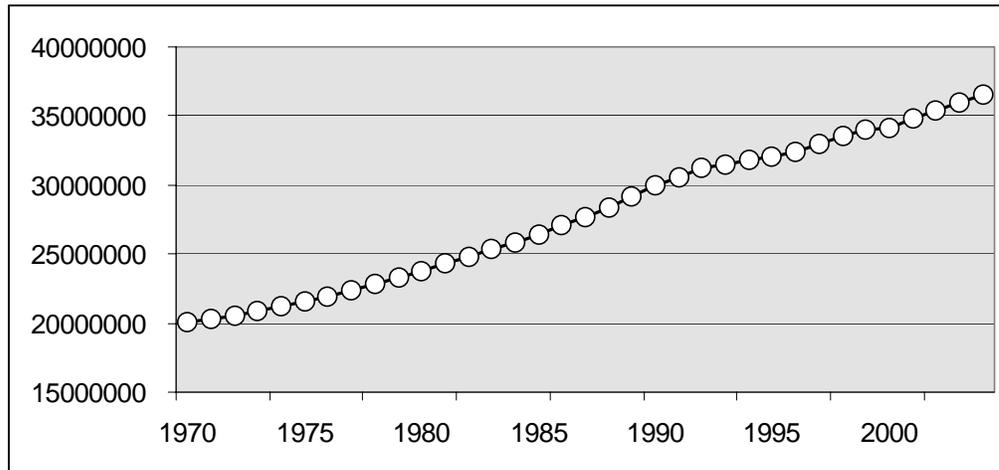
The Lead Agency has reviewed population counts (1970 – 2004) and the past (1970 – 2005) and projected (2006-2008) building permit activity and observed that there is no correlation between population levels and the amount of new housing building permits issued.<sup>28</sup> While population levels increase in a rather linear fashion, building permits fail to follow any easily discernable pattern.

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<sup>26</sup> Initial Statement of Reasons for Proposed Amendments to the California Consumer Products Regulation, Air Resources Board, September 1999 (Doc.227)

<sup>27</sup> See Appendix A, Table 15 for estimated VOC data in lbs/work day (250 day year) and lbs/calendar day (365 day year).

<sup>28</sup> Data obtained from the California Statistical Abstract, Table P-1, January 2006 (Doc.195) and the California Statistical Abstract, Table B-1, 2006. Compare with the housing permit graph in Appendix A, Figure 7.

**Figure 4: California Population Trend**

Residential Construction is extremely cyclical and is affected by independent variables such as interest rates, tax law, and employment. For example, construction of multifamily units dropped dramatically after 1987 when federal tax laws changed and federal subsidies for multifamily construction were reduced. This means that the annual amounts of pollutants that may be released due to the project will fluctuate up and down, with building permit activity, rather than necessarily increasing over time.

Utilizing the 39 year average + 2 STDEV permit numbers to assess Project impacts, allows the Lead Agency to rely on the probability that approximately 95% of the time, the number of building permits issued in one year will not be higher than +2 STDEV permit level.

The +2 STDEV permit numbers result in the emission of about 85 pounds of VOCs per working day (250 day year) in Riverside County. Riverside County is the county with the largest percentage of the statewide building permits and under this analysis would be expected to plumb about 76 houses per working day. In isolation, 85 pounds of VOC emitted per working day is not a large amount. However, the Project will not proceed in isolation. There will always be other activities generating ozone precursors at the same time.

## **G. Thresholds of Significance**

For this Project, impacts are considered to be significant if they:

1. Conflict with or obstruct implementation of the applicable air quality plan;
2. Violate any appropriate air quality standard or contribute substantially to an existing or projected air quality violation;
3. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
4. Expose sensitive receptors to substantial pollutant concentrations;
5. Create objectionable odors affecting a substantial number of people.

## **H. Air Quality Findings**

Potential Impact 1: Will the Project conflict with or obstruct implementation of an applicable air quality plan?

- The concentration of VOCs in Adhesives used for CPVC in construction is regulated through Adhesive Rules by some of the local air districts. A few of these rules have a lower limit than that proposed for the Project, but most have a higher limit for primer VOC content.
- The Project would not cause any adverse effect on any state or local air quality plans. Local plans with more stringent VOC requirements would take precedence over the plumbing code requirements. The Project would result in fewer emissions than what is currently permitted by local districts with less stringent requirements than the proposed project.

### Finding:

**Less than significant:** the Lead Agency has determined that the proposed Project will not conflict with or obstruct the implementation of any applicable air quality plans.

Potential Impact 2: Will the Project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

- Many areas of California are already out of attainment for ozone.
- Adhesives used in the installation of CPVC plumbing emit VOCs that can contribute to the formation of ground-level ozone (smog).
- The Project limits the type of cements and primers that may be used for CPVC installation to those that are Low VOC. Low VOC is defined to mean no more than 550 g/L for primers and 450 g/L for cements, as determined by the South Coast Air Quality Management District's Laboratory Methods of Analysis for Enforcement Samples, Method 316A.
- There are many assumptions needed and no specifically appropriate air quality standards available to evaluate the estimated impact of the Project's VOC emissions.
- VOC emissions projected to occur as a result of the change in the plumbing code are well below background ROG levels emitted by Natural Sources.
- Many California air districts are designated as Non-attainment for federal and state ozone standards.
- Even a small addition of ozone precursors to an area with ozone attainment issues may contribute to a net increase in ozone.
- VOCs in CPVC adhesive contain less than seven carbon atoms.
- Certain VOCs with seven or more carbon atoms have been known to contribute to PM generation.
- CPVC installation will not increase particulate matter concentrations.
- The Project is not expected to impact any criteria pollutants other than ozone.

Finding:

**Significant:** the Lead Agency has determined that the proposed Project will not violate any air quality standard but may contribute substantially to an

existing or projected air quality violation where the addition of even a small amount of ozone precursors can be considered to be a substantial contribution.

Potential Impact 3: Will the Project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

- The proposed changes to the plumbing code will not result in any direct or indirect emissions of any criteria pollutants.
- The proposed changes will result in indirect emissions of volatile organic compounds that are known to be ozone precursors.
- The use of local air district construction and operational thresholds of significance for VOC emissions are not appropriate standards to evaluate the air impacts for a proposed building code change.
- Calculations based on reasonable expectations of increased CPVC use and estimations of the amount of cement and primer that would be used due to the proposed plumbing code changes show that the emissions of ozone precursors would be small on a countywide and statewide basis. Expected emissions are well below background levels emitted by Natural Sources such as vegetation.
- Many California air districts are designated as Non-attainment for federal and state ozone standards.
- Even a small addition of ozone precursors to an area with ozone attainment issues may result in a cumulatively considerable net increase in ozone.
- VOCs in CPVC adhesive contain less than seven carbon atoms.
- Certain VOCs with seven or more carbon atoms have been known to contribute to PM generation.
- CPVC installation will not increase particulate matter concentrations.

- The increase in volatile organic compound emissions will not occur in substantial concentrations, either within an individual unit or cumulatively.
- The Project is not expected to impact any criteria pollutants other than ozone.

Finding:

**Significant:** the Lead Agency has determined that the proposed Project will have minor indirect impacts on air quality, but may result in a cumulatively considerable net increase of ozone in those areas that are designated as Non-attainment under the applicable federal or state ambient air quality standard or in those areas where maintaining ozone Attainment status is difficult.

Potential Impact 4: Will the Project expose sensitive receptors to substantial pollutant concentrations?

- The Project does not generate substantial pollutant concentrations.
- Sensitive receptors such as children, the elderly, and the infirm are not likely to be exposed to volatile organic compound emissions from CPVC installation because the emissions dissipate quickly and these individuals are not likely to be installing plumbing pipe.

Finding:

**Less than significant:** the Lead Agency has determined that the proposed Project will not expose sensitive receptors to substantial pollutant concentrations.

Potential Impact 5: Will the Project create objectionable odors affecting a substantial number of people?

- The 2000 MND analyzed the environmental impacts of CPVC use within individual residential units. The proposed plumbing code change would result in lowering the barriers to CPVC use and likely increase its use.
- CPVC Adhesives have an odor that may be considered objectionable to some people.

- Odors resulting from CPVC adhesive use are temporary and will not effect people outside the immediate vicinity of where the adhesive is used.
- Increasing the number of units utilizing CPVC will not expose a substantial number of people to objectionable odors.

Finding:

**Less than significant:** the Lead Agency has determined that the proposed Project will not create objectionable odors affecting a substantial number of people.

## Chapter 4: Water Quality

### A. Environmental Setting

As mentioned previously, this EIR is limited to the impacts associated with the Project. The Project is not the approval of CPVC plastic pipe for potable water distribution. The Project is the removal of the Findings Requirement, which served as a prerequisite to local approvals of CPVC installations, from the current California Plumbing Code. Removal of the Findings Requirement would likely result in an increase in CPVC installations for potable water distribution in residential structures.

The 2000 MND analyzed the impacts associated with conditional CPVC use (by virtue of the Findings Requirement). That analysis included potential impacts on water quality. In this EIR, the Lead Agency will only consider water quality impacts which are associated with increased use of CPVC across the state (not within a particular household), as well as any new information related to individual-unit use that was not available or could not have been known at the time the MND was approved.

The current CPC allows the use of CPVC products for residential potable water distribution if specific findings are made, and worker safety and flushing requirements are met. The Lead Agency is proposing eliminate the requirement that, prior to approving the installation of CPVC as a potable water plumbing material, a local building official must find that there was, or would be, a premature failure of metallic pipe because of corrosive water and/or soil conditions prior to approving CPVC as a potable water plumbing material (the “**Findings Requirement**”). The current worker safety and flushing requirements would remain as part of the CPC.

There is the potential for materials used in CPVC installation to contaminate the water carried through the pipe. CPVC pipe and fittings are joined together using cements, and sometimes primers (collectively: **Adhesives**), that contain solvents including acetone, tetrahydrofuran, methyl ethyl ketone, and

cyclohexanone. Public agencies that regulate the state's drinking water and water quality have established standards to protect human health and the environment. In addition, there are private voluntary quality and health standards for CPVC products. The Lead Agency has evaluated the applicable standards and found them to be suitable for use in determining the water quality environmental impacts of the Project.

## **B. Regulatory Setting**

### **Water Resources Control Boards**

The state's water quality is regulated through the Porter-Cologne Water Quality Control Act (**Porter-Cologne**).<sup>29</sup> The State Water Resources Control Board (**SWRCB**) has ultimate jurisdiction. However, the Regional Water Quality Control Boards (**RWQCBs**) (collectively: **Boards**) have been established to manage water quality locally on a more localized level. The SWRCB and the Boards control water quality through the regulation of the discharges of unsafe levels of chemicals into the state's waters. The Boards have the authority to implement and enforce the water quality laws, regulations, policies and plans to protect the groundwater and surface waters of the state from degradation".

The solvent discharges of CPVC Adhesives do not rise to the level of a "Hazardous Substance" under Porter-Cologne. A "Hazardous Substance" under Porter-Cologne does not include a substance that is discharged to a surface water in a quantity less than a reportable quantity as determined by regulations issued pursuant to Section 311(b)(4) of the Federal Water Pollution Control Act (**FWOCA**).<sup>30</sup> Regulations for these quantities are found in 40 Code of Federal Regulations part 302.4 (2005). Table 2 lists the chemicals that may be expected to be released for a short time following CPVC pipe installation and the FWOCA reportable quantity limits.

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<sup>29</sup> California Water Code section 13000 et seq.

<sup>30</sup> Water Code section 13050(p)(2)(C)

**Table 2: FWOCA Reportable Quantities**

<b>Chemical</b>	<b>Reportable Quantity (pounds)</b>
Acetone	5000
Cyclohexanone	5000
Methyl ethyl ketone	5000
Tetrahydrofuran	1000

During CPVC plumbing installation, the CPVC Adhesives are not reasonably anticipated to be discharged into surface water in the quantities listed. Discharging thousands of pounds of solvents would require quantities of CPVC Adhesives that are not ordinarily encountered in residential construction.

Another component of the regulatory setting is the NSF International/ American National Standards Institute (**NSF/ANSI**) “Standard 61 Drinking Water System Components – Health Effects” (NSF/ANSI 61). This standard is intended to cover specific materials or products that come into contact with: drinking water, drinking water treatment chemicals, or both. The products and materials covered include pipes and sealing materials (including solvent cements). The Standard provides a means of evaluating contaminants or impurities imparted indirectly to drinking water and it establishes minimum health effects requirements for the chemical contaminants and impurities that may be leached into drinking water from products used in drinking water systems.

Certification against NSF/ANSI 61 has replaced the EPA Additives Advisory Program for drinking water system components. EPA terminated its advisory role in April 1990. The EPA recognizes NSF/ANSI Standard 61 as the criteria for determining the health effects acceptability of water contact materials as referenced in Federal Register Notices: Vol 53, No. 130 July 7, 1988 and Vol 62, No. 163 August 22, 1997.)

NSF/ANSI Standard 14: Plastics piping system components and related materials (NSF/ANSI 14) is another relevant regulatory feature. This standard

establishes physical and performance requirements that apply to plastic piping system components. The standard also applies to materials (resin or blended compounds) and ingredients used to manufacture plastic piping system components.

California requires CPVC pipe to meet the requirements of NSF 61 and NSF 14 in order to be eligible for use in residential potable water distribution. The proposed Project does not change this requirement.

Total Allowable Concentration Levels: Since the MND was certified in 2000, three Total Allowable Concentration (**TAC-H<sub>2</sub>O**)<sup>31</sup> and Single Product Allowable Concentration (**SPAC**) levels have been lowered. The new levels are displayed in Table 3.

**Table 3: NSF TAC/SPAC Standards**

<b>Chemical</b>	<b>TAC-H<sub>2</sub>O</b>	<b>SPAC</b>	<b>Source</b>
<b>MEK</b>	4 mg/L	0.4 mg/L	Oral RfD on USEPA IRIS database with a default 20% relative source contribution for drinking water. Agency Consensus Date: 09/10/2003
<b>Acetone</b>	6	0.6	Derived from the oral RfD on the EPA IRIS database with a default 20% relative source contribution for drinking water. Verification date: 6/23/03
<b>Cyclohexanone</b>	30	3	NSF action level External peer review date: 4/26/02

A SPAC is the maximum concentration of a contaminant in drinking water that a single product is allowed to contribute.<sup>32</sup> A TAC- H<sub>2</sub>O is the maximum

<sup>31</sup> The acronym "TAC-H<sub>2</sub>O" is being used to avoid confusion with TAC (toxic air contaminant which is used elsewhere in this EIR.

<sup>32</sup> *Drinking water system components Health effects*, NSF/ANSI 61 – 2005.

concentration of a nonregulated contaminant allowed in a public drinking water supply.<sup>33</sup> This system of setting maximum levels is intended to identify the human health risks that may be posed by substances conveyed to drinking water under the normal anticipated use of the products. The maximum allowable levels are established based on toxicology data, risk assessment studies, and the level at which the contaminant is leached into the water.

### **C. Disinfection Byproducts**

Disinfectants are an essential element of drinking water treatment because of the barrier they provide against harmful waterborne microbial pathogens. However, disinfectants, such as chlorine, react with naturally occurring organic and inorganic matter in source water and distribution systems to form disinfection byproducts (**DBPs**) that may pose health risks. DBPs have been associated with increased risks for cancer and reproductive and developmental health effects. Freshly installed CPVC plumbing systems can leach organics into drinking water that may serve as DBP precursors.

### **D. Regulatory Setting**

The first rule to regulate DBPs was promulgated in 1979.<sup>34</sup> The Total Trihalomethanes Rule set a maximum contaminant level (**MCL**) of 0.10 mg/L for total trihalomethanes (**TTHM**). This TTHM standard applied only to community water systems that used surface water and/or ground water that served at least 10,000 people and that added a disinfectant to the drinking water during any part of the treatment process.

The Stage 1 rule, finalized in 1998<sup>35</sup>, applies to all community and nontransient noncommunity water systems that add a chemical disinfectant to water. The rule established maximum residual disinfectant level goals (**MRDLGs**)

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<sup>33</sup> *Drinking water system components Health effects*, NSF/ANSI 61 – 2005.

<sup>34</sup> National Interim Primary Drinking Water Regulations; Control of Trihalomethanes in Drinking Water. 44 FR 68624, November 29, 1979

<sup>35</sup> National Primary Drinking Water Regulations; Disinfectants and Disinfection Byproducts; Final Rule. 63 FR 69390, December 16, 1998. <http://www.epa.gov/safewater/mdbp/dbpfr.pdf>.

and enforceable maximum residual disinfectant level (**MRDL**) standards for three chemical disinfectants--chlorine, chloramine, and chlorine dioxide; maximum contaminant level goals (**MCLGs**) for three trihalomethanes (**THMs**), two haloacetic acids (**HAAs**), bromate, and chlorite; and enforceable maximum contaminant level (**MCL**) standards for TTHM, five haloacetic acids (**HAA5**), bromate (calculated as running annual averages (**RAAs**)), and chlorite (based on daily and monthly sampling). The Stage 1 rule uses two groups of DBPs as indicators for the various byproducts that are present in water disinfected with chlorine or chloramines: THMs and HAA5. Under the Stage 1 rule, water systems that use surface water, or ground water under the direct influence of surface water and that use conventional filtration treatment are required to remove specified percentages of organic materials, measured as total organic carbon (**TOC**), that may react with disinfectants to form DBPs. Removal is achieved through enhanced coagulation or enhanced softening, unless a system meets one or more alternative compliance criteria.

The EPA recently announced new regulations for disinfectants and disinfection byproducts control.<sup>36</sup> The regulations apply to community and nontransient noncommunity water systems that add a primary or residual disinfectant other than ultraviolet light or that deliver water that has been treated with a primary or residual disinfectant other than ultraviolet light.<sup>37</sup> The new rule finalizes the proposed Stage 2 MCLG for trichloroacetic acid of 0.02 mg/L and sets an MCLG for monochloroacetic acid of 0.07 mg/L. EPA is not changing the other MCLGs finalized in the Stage 1 rule.<sup>38</sup>

The provisions of the Stage 2 rule focus first on identifying the higher risks locations in the distribution system through the Initial Distribution System Evaluation (**IDSE**). The rule then addresses reducing exposure and lowering

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<sup>36</sup> Federal Register January 4, 2006, Vol 71 No 2 page 387 – 493

<sup>37</sup> Federal Register January 4, 2006, Vol 71 No 2 page 387 – 493

<sup>38</sup> National Primary Drinking Water Regulations: Stage 2 Disinfectants and Disinfection Byproducts Rule; National Primary and Secondary Drinking Water Regulations: Approval of Analytical Methods for Chemical Contaminants; Proposed Rule. 68 FR 49548, August 18, 2003.

DBP peaks in distribution systems by using a new method to determine MCL compliance (locational running annual average (**LRAA**)), defining operational evaluation levels, and regulating consecutive systems.

The new regulations became effective March 6, 2006. The new regulations did not change the MCL for TTHM (0.080 mg/L) or for HAA5 (0.06 mg/mL). The California Department of Health Services has adopted the Federal MCL for TTHM.

CPVC Impacts: The regulatory limits for DBPs are based on lifetime exposures and include margins of safety to protect human health. The NSF/ANSI Standard 61 regulates TTHM leachates from CPVC products (pipe and cement) and sets a limit that is 10 percent of the EPA MCL. Thus, the EPA allows water to have up to 0.08 mg/L of TTHM and 0.06 mg/L of HAA5, but NSF/ANSI certified CPVC products can only contribute up to 0.008 mg/L of TTHM and 0.006 mg/L of HAA5. Since the NSF/ANSI standard is based on the EPA standard, any future change in the EPA standard will result in a corresponding change in the NSF/ANSI standard.

Given the nature of the regulatory controls for DBPs as well as the assurances of NSF/ANSI certified CPVC products, CPVC products used in California will meet the current standards and not significantly contribute quantities of indicator DBPs or DBP precursors. NSF/ANSI 61 certification requires testing against established, health-conservative standards and provides assurance that CPVC products used in California will meet the current standards and not significantly contribute to exceeding the MCL for THMs.

#### **E. Threshold of Significance**

Thresholds of significance for cumulative impacts related to contamination of the waters of the State are:

1. Published peer-reviewed reports of significant adverse environmental impacts to the waters of the State resulting from the use of NSF/ANSI 61 and 14 CPVC certified pipe and adhesives that have been installed and

used according to California plumbing code standards for potable water distribution.

2. Violations of any appropriate water quality standard or discharge permit.

#### **F. Mitigation Measures**

Mitigation measures either are already in place or will be implemented to minimize or eliminate potential adverse impacts. The California Plumbing Code currently requires flushing of all potable water systems prior to use, regardless of the type of material used. This is also required by the Uniform Plumbing Code. This is a standard practice in the plumbing industry. It is intended to reduce the concentrations of foreign materials that generally occur in newly installed plumbing systems. The proposed Project will not modify or delete this flushing requirement.

The preferred alternative of the Project requires the use of Low-VOC adhesives. This requirement will reduce the amount of cyclohexanone, methyl ethyl ketone, and tetrahydrofuran that will be discharged into wastewater.

#### **G. Water Quality Findings**

The Lead Agency finds that contamination of drinking water by leachates from CPVC and CPVC Adhesives because of CPVC installations pursuant to the proposed Project would not have a significant adverse impact on water quality. While there may be disagreement over the details of past studies, there is no substantial evidence to prove a significant impact. The information relied upon by the Lead Agency includes the following:

1. For over 20 years, the state has approved for residential structures the use of ABS plastic pipe for drain/waste/vent (**D/W/V**), PVC or CPVC for street water mains, and PVC for the service line from the street water main to the house. The 2000 MND also permitted the statewide use of CPVC inside residential structures if specific findings were made, and worker safety and flushing requirements were met. According to estimates provided by the plumbing industry, since 2001 approximately 11.6 million feet of CPVC pipe have been shipped to California for use in construction under current permitted uses.

Most of these permitted uses of plastic pipe have used similar types of Adhesives for installation and both the pipes and Adhesives are routinely transported and used at construction sites. The Lead Agency has found no information in the record to support a finding of adverse environmental impacts due to the existing statewide use of these CPVC Adhesives when used according to manufacturer's instructions and in compliance with the laws of California.

2. CPVC pipe material is not classified as a hazardous material or a hazardous waste pursuant to the Department of Toxic Substance Controls waste evaluation criteria set forth in the Health and Safety Code.

3. CPVC pipe and Adhesives are not on or proposed to be on the Proposition 65 list as a material or chemical in the state's drinking water sources known to cause cancer, birth defects or other reproductive harm, and there are no requirements pursuant to Proposition 65 to inform citizens about exposures to CPVC pipes or the chemicals in the adhesives.

4. There are no health advisories, action levels (Maximum Contaminants Levels and Drinking Water Action Levels), or Public Health Goals established or proposed for CPVC pipe material or Adhesives.

5. The CPC already requires that CPVC plastic pipe that will be used in California for residential potable water distribution meet NSF/ANSI Standard 61 - Drinking Water System Components and the NSF/ANSI Standard 14 Plastic Piping System Components and Related Materials Standard. These certifications can only result from findings that concentrations of leached materials from the CPVC plumbing system products, materials, and ingredients (including all chemicals, contaminants, or impurities in the product) that came in contact with the water did not result in any unacceptable toxicological levels. Furthermore, NSF/ANSI-certified CPVC products will have satisfied an extensive risk assessment protocol (incorporating both EPA and DHS approved methodologies).

NSF certification is relied upon by other public agencies for drinking water safety. Based on review of the NSF standards and testing, the Lead Agency

considers NSF testing and certification meet existing standards to provide a reasonable and conservative presumption and assurance of safety.

Since the MND approval in 2000, NSF has lowered the Total Allowable Concentration and Single Product Allowable Concentration for acetone, cyclohexanone, and methyl ethyl ketone. Given that the allowable levels were lowered and not raised, and that CPVC products will thus be subject to more stringent standards, there is not likely to be a significant adverse environmental impact associated with this new information.

6. CPVC pipe and Adhesives are not currently regulated or proposed to be regulated by the State Water Resources Control Board for impacts on water quality, or to ensure compliance with discharge requirements at Publicly Owned Treatment Works.

7. The use and installation of CPVC plumbing for potable water is not expected to contribute significantly to the formation of disinfection byproducts.<sup>39</sup> The EPA has promulgated new rules relating to disinfection byproducts, but those rules do not change the MCLs of THM or HAA5 that were established in 1998. Disinfection byproducts standards are based on lifetime exposures and CPVC plumbing is not expected to have long-term leaching of chemicals that may be precursors to disinfection byproducts.

**Less than Significant:** Based on all the relevant information for the Project, including the record accumulated since the adoption of the CPC amendment allowing conditional statewide use of CPVC pipe (pursuant to the 2000 MND), and the record of previous Lead Agency examinations of CPVC, the Lead Agency has determined that the proposal to remove the Findings Requirement will not cause the violation of any water quality standards or waste discharge requirements.

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<sup>39</sup> Letter from California Department of Health Services, Drinking Water Program, dated October 21, 1998 in response to a request for a review of certain portions of a draft EIR for CPVC pipe from 1989. (Doc.223, also found in Appendix E, page 95 of the Final EIR dated November 1998, State Clearinghouse No. 970820040.

## Chapter 5: Worker Safety

### A. Environmental Setting

Installation of CPVC pipe requires the use of cements and sometimes primers (collectively: **Adhesives**). The Adhesives contain four solvents: acetone, cyclohexanone, methyl ethyl ketone (**MEK**), and tetrahydrofuran (**THF**). These solvents are volatile (i.e. they evaporate readily). CPVC installers can be exposed to these solvents by skin contact and inhalation. In addition, all but acetone are considered to be ozone precursors (volatile organic compounds (**VOCs**)) that may contribute to the formation of smog.

Based on the 2000 MND, CPVC pipe, including the use of Adhesives, has already been approved for use in individual California residences when there has been a finding that there is or will be a premature failure of metallic pipe because of corrosive water and/or soil conditions (referred to as the "**Findings Requirement**"). As part of the MND, certain worker safety measures were required to be included in the California Plumbing Code for CPVC pipe installations to address the issue of solvent exposures. These measures include the use of sufficient mechanical ventilation or respirators to maintain chemical exposures below the relevant exposure limits established by state regulations. Workers are also required to use non-latex thin gauge (4 millimeters) nitrile gloves, or other gloves providing an equivalent or better degree of protection during the installation of the CPVC plumbing system.<sup>40</sup>

The proposed project would remove the Findings Requirement, but would leave the worker safety measures intact. Removal of the Findings Requirement may result in an increase in the number of residential units plumbed with CPVC pipe. However, an increase in the overall number of units plumbed with CPVC pipe will not increase the extent of an individual installer's exposure to CPVC pipe adhesives during installation in an individual unit. Through the 2000 MND, it

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<sup>40</sup> "Special Requirements for CPVC Installation within Residential Structures," found in the California Code of Regulations, title 24, part 5, appendix 1, section 1.2.

was determined that there were no potential significant impacts on worker health and safety due to worker exposure to CPVC pipe adhesives when installations are performed pursuant to the mitigation measures.

## **B. Regulatory Setting**

The Department of Industrial Relations' Division of Occupational Safety and Health operates the California Occupational Safety and Health Assessment Program (**Cal/OSHA**). The Cal/OSHA Program is responsible for enforcing California laws and regulations pertaining to workplace safety and health and for providing assistance to employers and workers with workplace safety and health issues. Cal/OSHA has an enforcement unit that conducts inspections of California workplaces based on worker complaints, accident reports and profiles as high hazard industries. There are 22 Cal/OSHA Enforcement Unit district offices located throughout the state of California.

Cal/OSHA regulations set forth Permissible Exposure Limits (**PELs**), which are legal exposure limits for airborne contaminants. Specifically, they are concentration limits to which nearly all workers may be exposed daily during a 40-hour workweek for a working lifetime without adverse effect. The PELs reflect current medical opinion and industrial hygiene practice with doubts being resolved on the side of safety.<sup>41</sup>

Exposure limits are given in three categories: 1) PELs, 2) short term exposure; and occasionally, 3) ceiling limit. An employee's exposure to an airborne contaminant in a workday, expressed as an 8-hour time-weighted average (**TWA**) concentration, cannot exceed the PEL set for that substance. The short term exposure limit (**STEL**) is a 15-minute TWA exposure which is not to be exceeded at any time during a workday even if the 8-hour TWA is below the PEL. A ceiling limit is the maximum concentration of an airborne contaminant to which an employee may be exposed at any time.<sup>42</sup>

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<sup>41</sup> 8 CCR 5155 (a)(2).

<sup>42</sup> 8 CCR 5155(b)

The 2000 MND applied the Cal/OSHA exposure limits then in effect and found that the impacts on worker safety due to worker exposure to CPVC pipe adhesives when installations are performed pursuant to the mitigation measures were less than significant. However, since the MND was approved in 2000, Cal/OSHA has changed the PEL and STEL for acetone. In 2006, the PEL was lowered from 750 ppm to 500 ppm (1780 mg/m<sup>3</sup> to 1200 mg/m<sup>3</sup>), the STEL was lowered from 1000 ppm to 750 ppm (2400 mg/m<sup>3</sup> to 1780 mg/m<sup>3</sup>) and a ceiling limit of 3000 ppm was added. The exposure limits were reduced to conform to those established by the American Conference of Governmental Industrial Hygienists (**ACGIH**) and to protect employees from the irritant effect of high concentrations of acetone.<sup>43</sup>

### **C. Discussion**

Changes in the safety profiles of some CPVC products along with the introduction of new projects should result in reduced worker exposure to chemical contaminants. Since the 2000 MND was approved, the concentrations of most of the VOCs in CPVC adhesives have been reduced. One-step cements (no primer required) are available and approved for use in California. Reducing the amount of Adhesives needed to be used will reduce the quantities of chemicals the workers are exposed to.

The reduction in VOC content also has generally resulted in an increase in acetone concentrations. And as noted above, the PEL for acetone was reduced in 2006. However, the Lead Agency is unaware of any reported incidences of plumbers being exposed to acetone in concentrations that exceed the new PELs.

Some of California's air districts have issued rules limiting the VOC content of adhesives. These low-VOC regulations are not uniform throughout the state. Air quality districts with the worst air quality problems usually require more stringent reductions. However; this is not consistently true and there are many

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<sup>43</sup> Occupational Safety and Health Standards Board Initial Statement of Reasons for an amendment of 8 CCR 5155 which was adopted April 20, 2006. (Doc.222)

exceptions to the rules that may make the limits inapplicable to CPVC pipe installation.

As discussed in Chapter 3, Air Quality, the Air Resources Board (**ARB**) has listed methyl ethyl ketone (**MEK**) as a toxic air contaminant (**TAC**).<sup>44</sup> MEK was listed as a TAC when the 2000 MND was approved. This is not new information for which additional analysis is needed for worker safety impacts. Increasing the number of houses that may be plumbed with CPVC does not increase the rate of exposure during a single installation within a unit. The limits on permissible worker exposure to air contaminants are based on eight-hour work days and a lifetime of work. The MND found that no significant impacts are likely to occur to workers installing CPVC pipe.

Since the 2000 MND was approved, MEK has been deleted from the U.S. EPA's listing of toxic air contaminants. Again, as discussed in more detail in Section 3, Air Quality, the ARB listing was a direct result of adoption of the EPA's list.

#### **D. Thresholds of Significance**

To determine the potentially significant impact of worker health and safety, the Lead Agency considers the following to be a threshold of significance:

1. Regular exceedance of legally enforceable workplace exposure standards for acetone, methyl ethyl ketone, tetrahydrofuran, and/or cyclohexanone, where workers are following safety and precaution recommendations on material labels and Material Safety Data Sheets as well as the regulations in the CPC.
2. For a cumulative impact, the Lead Agency considers any repeated exceedance of the threshold of significance to be significant.
3. Expose the public to significant levels of toxic air contaminants, defined as follows: (1) the probability of contracting cancer for the Maximally Exposed Individual (**MEI**) exceeds 10 in one million; or (2) ground-level

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<sup>44</sup> Final Staff Report: Update to the Toxic Air Contaminant List, Air Resources Board, December 1999. (Doc.212)

concentrations of non-carcinogenic toxic air contaminants would result in a hazard Index greater than 1 for the MEI.

### **E. Worker Safety Impact Findings**

The Lead Agency has taken steps to minimize worker exposure to chemical contaminants during CPVC installation. As part of the proposed regulations, the Lead Agency will require the use of low-VOC CPVC cements and primers statewide. This may reduce worker exposure to VOCs. Although not required, use of one-step cement, would also reduce exposure.

Workers who do not follow product label and MSDS safe use instructions may occasionally experience solvent exposures that exceed permissible exposure levels. Intentional misuse or failure to follow safety instructions can render many things unsafe. The Lead Agency does not consider the potential for unsafe work conditions that could result from intentional misuse, or failure to follow instructions for safe use, to constitute a significant adverse impact within the context of CEQA.

The Mitigated Negative Declaration analyzed the health impacts of CPVC installation on pipe workers. The MND found that with certain mitigation measures, the impacts to pipe workers were less than significant.

Since the MND was approved, the Permissible Exposure Level (PEL) for acetone was reduced.

The Lead Agency is not aware of any regulatory reports of workers being exposed to acetone levels in excess of the new acetone PEL standard.

Methyl ethyl ketone has been removed from the federal toxic air contaminant list by the U.S. Environmental Protection Agency.

**Less than Significant:** The Lead Agency concludes, based on consideration of the whole record, that if the proposed regulations are approved, adverse impacts to workers will be less than significant.

## **Chapter 6: Solid Waste**

If use of CPVC as a potable water piping material increases as a result of the Project approval, this would eventually result in an increased volume of demolition debris requiring disposal. Debris would be generated when residential buildings using CPVC pipe for potable water piping are demolished, when CPVC pipe is replaced, and when scraps are cast off during installation.

### **A. Environmental Setting**

Plastics have unique characteristics that make them a useful and popular choice of materials. Plastics are generally lightweight, durable and able to be formed into a wide variety of shapes. Plastics are now used in packaging, furniture, appliances, automobiles, buildings, medical equipment and in a wide variety of industrial and consumer goods.

In California, plastics represent 9.5 percent by weight and about 18 percent by volume of the waste placed in landfills: an estimated 3.4 million tons in 2000. Plastics are the fifth-largest category of material by total weight and the second-largest category of waste by volume in California landfills.<sup>45</sup>

Plastics are divided into several categories. CPVC pipe is classified as part of the Durable Plastic Items (**DPIs**) group, not as construction debris as one might expect. Other examples of DPIs include mop buckets, plastic outdoor furniture, plastic toys, CD's, plastic stay straps, sporting goods, and plastic house wares such as dishes, cups, and cutlery. This category also includes building materials such as house siding, window sashes and frames, housings for electronics (such as computers, televisions and stereos), fan blades, impact-resistance cases (for example, tool boxes, first aid boxes, tackle boxes, sewing

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<sup>45</sup> Plastics White Paper, Optimizing Plastics Use, Recycling, and Disposal in California, Integrated Waste Management Board, page 7-8, May 2003. The 9.5% data originated from the Statewide Characterization Study, produced under contract by the Cascadia Consulting Group Inc for the Integrated Waste Management Board, December 2004. This 2004 study did not contain data based on volume.

kits, etc.), and other types of plastic pipes and fittings.<sup>46</sup> DPs account for about 20 percent by weight of the total plastics disposed of in California landfills.<sup>47</sup>

Most plastics are not recycled and of those that are, most are plastic bottles. Rate of sales far exceeds rate of recycling. This is not surprising given that plastics are uneconomical to recycle. Average collection and processing costs often exceed scrap values by more than two and one half times.<sup>48</sup> Notably, aluminum is the only material that has a higher recycling rate than the amount disposed.<sup>49</sup>

It is a common construction industry practice for existing pipe to be left in the structure when it is replaced with new pipe. If this practice were to continue, it would mean that the majority of CPVC pipe would not impact landfill capacities for quite some time after installation, since most housing units continue in existence for well over 30 years (the typical “mortgage life” of residential properties). However, eventually, the structure will likely be demolished and the CPVC would need to be disposed of properly. Any disposal challenges, however, must be balanced against the benefits derived from the long, productive life of CPVC pipes.

## **B. Regulatory Setting**

The California Integrated Waste Management Board (**IWMB**) is the state agency designated to oversee, manage, and track the 76 million tons of waste generated each year in California. IWMB promotes a sustainable environment. In addition to many innovative programs and incentives, IWMB promotes the use of new technologies for the practice of diverting California’s resources away from landfills.

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<sup>46</sup> Statewide Characterization Study produced under contract by Cascadia Consulting Group Inc for the Integrated Waste Management Board, December 2004, page 101. (Doc.180)

<sup>47</sup> Plastics White Paper, Optimizing Plastics Use, Recycling, and Disposal in California, May 2003, Integrated Waste Management Board. (Doc.178)

<sup>48</sup> Plastics White Paper, Optimizing Plastics Use, Recycling, and Disposal in California, May 2003, Integrated Waste Management Board. (Doc.178)

<sup>49</sup> Plastics White Paper, Optimizing Plastics Use, Recycling, and Disposal in California, May 2003, Integrated Waste Management Board. (Doc.178)

There are four major existing environmental laws that relate to plastics: 1) the California Integrated Waste Management Act (Pub. Resources Code, §40000 et seq.); 2) the Rigid Plastic Packaging Container Act (Pub. Resources Code §42300 et seq.); 3) the "Plastics Trash Bag Law" (Chapter 1096, Statutes of 1993, Hart, SB 951); and 4) the California Beverage Container Recycling and Litter Reduction Act of 1986 ("Bottle Bill" or "AB 2020"). None of these laws deal specifically with CPVC plastic or plastic pipe in general.

### **C. Discussion**

The Lead Agency recognizes that California has a problem with all plastic recycling. While there has been a concerted effort to encourage plastic bottle recycling, the same is not true for other plastic items. A shift in California policy is necessary to truly address the issues of plastics disposal and recycling.

There is no reason to suspect that CPVC solid waste impacts will be any better or worse than other non-bottle plastics. CPVC pipe has a long lifetime, unlike plastic water bottles that are generally used once, in possibly as little as five minutes, and then thrown away. CPVC pipe for potable water piping in residential buildings will not appear in the demolition debris waste stream in significant quantities until buildings employing CPVC pipe are demolished at the end of their useful lives, which likely will be well over 30 years (the typical "mortgage life" of residential properties).

In general, plastics recycling is increasing and is expected to further increase in the future. There is recycling of other plastics, including PVC, the parent polymer for CPVC. The recycling of CPVC and PVC is based on the same basic technologies (sorting, reuse, and reforming). If CPVC pipe is used more extensively in the future in California, it is likely that it too will be recycled. However, CPVC will likely remain considerably less valuable than copper, and thus there will not be as strong a financial incentive to recycle CPVC as there will be to recycle copper. However, CPVC pipe can be recycled into items such as mobile home skirting, picnic tables, fence posts, and numerous other products. It

can also be reused rather than recycled, as is the case now with PVC pipe reclamation in California.

On average, 7,359 housing units are demolished in California every year. The highest percentage of this occurs in Los Angeles County where approximately 2,531 housing units are demolished each year.<sup>50</sup> While it would not be reasonable to assume that every demolished housing unit would contain CPVC plumbing, it is likely that some CPVC pipe will need to be disposed of each year. There is no way of predicting the exact amount or location of this disposal. CPVC plumbed units probably would not make up a significant portion of the demolished housing units until those structures reach an advanced age. Of course, natural disasters, major building projects, and other factors could result in fairly new housing units being demolished, but estimating where and when this would occur and what percentage of those units would contain CPVC would be mere speculation.

#### **D. Thresholds of Significance**

For this Project, impacts are considered to be significant if they:

1. Have a significant impact concerning the use of landfills with sufficient permitted capacity to accommodate the project's solid waste disposal needs; or
2. Have a significant impact concerning compliance with federal, state, and local statutes and regulations related to solid waste.

#### **E. Solid Waste Impacts Findings**

Recycling and reuse of CPVC pipe is both technically feasible and likely given current trends in plastic recycling,

**Less than Significant:** The Project will not violate or cause noncompliance with any federal, state, or local statutes or regulations related to solid waste.

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<sup>50</sup> Data supplied by the Department of Housing and Community Development's Housing Policy Development Division. See Appendix A, Table 28.

**Less than Significant:** The Project will have a less than significant impact on the use of landfills to accommodate the Project's solid waste disposal needs. This Project is a change in regulations and does not have any direct environmental impacts. However, when someone chooses to act in accordance with the proposed regulation, their actions will eventually lead to the need to dispose of CPVC pipe and thus, the Project will have indirect solid waste impacts. This may occur to a minor degree during CPVC pipe installation and to a greater degree when the CPVC pipe is replaced. There is no way to tell exactly when the CPVC pipe will be replaced, where it will be disposed or recycled, or what the plastic disposal laws will be at that time. However, the durability and protracted life of CPVC is likely to reduce both the necessity for replacement and any corresponding production of waste. Compared with the existing environment, CPVC plastic does not create any significant impacts related to solid waste disposal.

## **Chapter 7: Statutorily Required Sections**

The Statutorily Required Sections chapter includes brief discussions regarding those topics that are required to be included in an EIR, pursuant to CEQA Guidelines Section 15126.2. This chapter includes a discussion of the proposed project's potential to induce economic or population growth, and in addition, the chapter includes a list of significant irreversible environmental changes, cumulative impacts, and significant and unavoidable impacts which would be caused by the proposed project.

### **A. Growth Inducement**

The proposed project is the adoption of regulations for the California Plumbing Code. As such, growth and economic impacts are not expected. It is likely that the CPVC installation will still be performed by a licensed plumber and thus the only potential cost savings would be for materials. Although CPVC pipe may be cheaper than copper pipe, which is more commonly used, the price difference is not reasonably expected to result in increased housing or population growth. In addition, the project is not expected to eliminate any obstacles to growth (such as modifying zoning status might do) or to stimulate economic activities (such as building a gas station might do).

### **B. Significant Irreversible Environmental Effects**

CEQA Guidelines Section 15126.2(c) require consideration of significant irreversible environmental changes which would be caused by the proposed project should it be implemented. An impact would be determined to be a significant and irreversible change in the environment if:

- Development of the project would involve a large commitment of nonrenewable resources;
- The primary and secondary impacts of the project would generally commit future generation to similar uses;

- Development of the proposed project would involve uses in which irreversible damage could result from any potential environmental accidents associated with the project; or
- The phasing and eventual development of the project would result in an unjustified consumption of resources.

The proposed project would likely result in or contribute to the following irreversible environmental changes:

- Increased background air emissions;
- Irreversible consumption of energy and natural resources associated with the production of the CPVC material and Adhesives;

### **C. Cumulative Impacts**

An EIR must discuss the “cumulative impacts” of a project when its incremental effects will be cumulatively considerable. This means that the incremental effects of the individual project would be considerable when viewed in connection with the effects of other current projects, and the effects of probable future projects.

#### Air Quality

Cumulative impacts regarding air quality are discussed in Chapter 3. The project will indirectly generate ozone precursors that could lead to ozone formation. Several areas within California are classified as non-attainment for state and federal ozone regulations. Even a small addition of ozone to these areas will contribute to the problem. Even with the implementation of appropriate mitigation, the cumulative impact cannot be reduced to a less-than-significant level and will remain significant and unavoidable.

### **D. Significant and Unavoidable Adverse Impacts**

Impacts that cannot be feasibly mitigated to a less-than-significant level remain significant and unavoidable adverse impacts. The proposed project would result in the following significant and unavoidable cumulative impact:

Short-term air quality impacts from the proposed project.

**E. Mitigation Measures Proposed to Minimize the Significant Effects**

The Lead Agency finds that the proposed building standards will result in cumulatively significant environmental impacts on air quality. The Project is incorporating a requirement for Low-VOC Adhesive use for CPVC installation. This will reduce the air impacts, but will not eliminate them entirely. For areas that are not in or have trouble maintaining ozone attainment status, any addition of ozone precursors could have a significant effect.

## **Chapter 8: Organizations and Persons Consulted**

- Arthur Backman, Ph.D, Technical Manager, Sr. R&D Associate, TempRite Products
- Alan De Salvio, Mojave Desert Air Quality Management District
- Bill Sandman, Tuolumne County Air Pollution Control District
- Bob Reynolds, Lake County Air Quality Management District
- Brent Backus, Associate Planner, Placer County Air Pollution Control District
- Calvin Willhite, Ph.D., Human and Ecological Risk Division, Department of Toxic Substances Control
- Charles Bush, Ph.D., Vice President – Chief Technical Officer, Oatey Co.
- Chris Anderson, Air Quality Specialist, Antelope Valley Air Quality Management District
- Chris Mace, Plumbing Design Estimator, Tri-Valley Mechanical, Inc.
- Christopher Brown, AICP, Air Quality Specialist, Planning and Public Relations, Mendocino County Air Quality Management District
- Dave Conway, Mariposa County Air Pollution Control District
- Dave Mitchell, San Joaquin Valley Unified Air Pollution Control District
- Elizabeth Katz, HESIS Industrial Hygienist, Occupational Health Branch, California Department of Health Services
- Gail Williams, Butte County Air Quality Management District
- Jeff Cash, Business Director – Americas Plumbing, Noveon
- Jeremy Brown, Codes & Regulatory Manager, NSF International
- Jim Aguila, Manager, Substance Evaluation Section, SSD/AQMB, California Air Resources Board
- Jim Harris, Amador County Air Pollution Control District
- John Bosanek, Technical Service Representative, Spears Manufacturing
- John Brown, Cooks Electronics
- Jon Becknell, Air Quality Specialist II, Great Basin Unified Air Pollution Control District
- J.T. Rogers, President, JT Rogers Plumbing Co
- Judy Yee, Manager, Implementation Section, Stationary Source Division, California Air Resources Board
- Laura Hocking, Ventura County Planning Division

- Linda Wheaton, Assistant Deputy Director, Division of Housing Policy Development, California Department of Housing and Community Development
- Marcella McTaggart, El Dorado County Air Quality Management District
- Martin Johnson, California Air Resources Board
- Mike Cudahy, Codes and Training Specialist, Plastic Pipe and Fittings Association
- Mike Zischke, JD, Morrison Foerster
- Peter Goren, Florida Department of Environmental Protection
- Richard Church, Executive Director, Plastic Pipe and Fittings Association
- Richard Johnson, Ph.D., Global Regulatory Manager, Plastics Additives, Rohm and Haas Company
- Richard Martin, NSF International
- Richard Tedder, Florida Department of Environmental Protection
- Richard Wales, Mojave Desert & Antelope Valley Air Quality Management Districts
- Rob Emery, Product Application Specialist, Oatey Co.
- Robert Conheim, California Integrated Waste Management Board
- Robert L. Kennedy, Jr., President, Kennco Plumbing
- Robert Raymer, P.E., Technical Director/Senior Advocate, California Building Industry Association
- Robert Reider, Planning Manager, San Diego County Air Pollution Control District
- Sam Longmire, Northern Sierra Air Quality Management District
- Steven Book, Ph.D., Chief, Monitoring & Evaluation Unit, Drinking Water Program, California Department of Health Services
- Susan McLaughlin, Supervising Air Quality Engineer, Yolo-Solano Air Quality Management District

**Appendix A**  
**Miscellaneous Tables and Figures**

**Table 4: Air District CPVC Adhesive Rules**

**Air Districts CPVC Adhesive Rules**  
(Maximum amount of VOCs (g/L))

<b>Air District</b>	<b>Basin</b>	<b>Cement</b>	<b>Primer</b>	<b>Exceptions</b>
Antelope Valley	South Coast Mojave Desert	270	250	5 ounces or less
El Dorado	Lake Tahoe Mountain Counties	250	250	5 ounces or less
Placer	Lake Tahoe Mountain Counties Sac Valley	490	650	8 ounces or less
Sacramento Metro	Sac Valley	490	650	No exemption for CPVC/Plastics
San Diego	San Diego	490	650	16 ounces or less
San Joaquin Valley Unified	San Joaquin Valley Mojave Desert	490	650	8 fluid ounces or less
Santa Barbara	South Central Coast	490	650	16 ounces or less
SF Bay Area	SF Bay Area North Coast	490	650	No exemption for CPVC/Plastics
Shasta	Sac Valley	490	650	No exemption for CPVC/Plastics
South Coast	South Coast Mojave Desert Salton Sea	490	650	Consumer Products
Tehama	Sac Valley	490	650	Consumer Products
Ventura	South Central Coast	490	650	None that are relevant
Yolo/Solano	Sac Valley SF Bay Area	490	450	No exceptions for CPVC/Plastics

**Table 5: Air Districts by County**

County	Air District
Alameda	Bay Area AQMD
Alpine	Great Basin Unified APCD
Amador	Amador County APCD
Butte	Butte County AQMD
Calaveras	Calaveras County APCD
Colusa	Colusa County APCD
Contra Costa	Bay Area AQMD
Del Norte	North Coast Unified AQMD
El Dorado	El Dorado County AQMD
Fresno	San Joaquin Valley Unified APCD
Glenn	Glenn County APCD
Humboldt	North Coast Unified AQMD
Imperial	Imperial County APCD
Inyo	Great Basin Unified APCD
Kern	Kern County APCD San Joaquin Valley Unified APCD
Kings	San Joaquin Valley Unified APCD
Lake	Lake County AQMD
Lassen	Lassen County APCD
Los Angeles	Antelope Valley AQMD South Coast AQMD
Madera	San Joaquin Valley Unified APCD

County	Air District
Marin	Bay Area AQMD
Mariposa	Mariposa County APCD
Mendocino	Mendocino County AQMD
Merced	San Joaquin Valley Unified APCD
Modoc	Modoc County APCD
Mono	Great Basin Unified APCD
Monterey	Monterey Bay Unified APCD
Napa	Bay Area AQMD
Nevada	Northern Sierra AQMD
Orange	South Coast AQMD
Placer	Placer County APCD
Plumas	Northern Sierra AQMD
Riverside	Mojave Desert AQMD South Coast AQMD
Sacramento	Sacramento Metropolitan AQMD
San Benito	Monterey Bay Unified APCD
San Bernardino	Mojave Desert AQMD South Coast AQMD
San Diego	San Diego County APCD
San Francisco	Bay Area AQMD
San Joaquin	San Joaquin Valley Unified APCD
San Luis Obispo	San Luis Obispo County APCD

County	Air District
San Mateo	Bay Area Air AQMD
Santa Barbara	Santa Barbara County APCD
Santa Clara	Bay Area AQMD
Santa Cruz County	Monterey Bay Unified APCD
Shasta County	Shasta County AQMD
Sierra County	Northern Sierra AQMD
Siskiyou County	Siskiyou County APCD
Solano County	Bay Area AQMD Yolo-Solano AQMD
Sonoma County	Bay Area AQMD Northern Sonoma County APCD
Stanislaus County	San Joaquin Valley Unified APCD
Sutter County	Feather River AQMD
Tehama County	Tehama County APCD
Trinity County	North Coast Unified AQMD
Tulare County	San Joaquin Valley Unified APCD
Tuolumne County	Tuolumne County APCD
Ventura County	Ventura County APCD
Yolo County	Yolo-Solano AQMD
Yuba County	Feather River AQMD

**Table 6: Air Basins by County**

<b>County</b>	<b>Air Basin(s)</b>
Alameda County	San Francisco Bay Area
Alpine County	Great Basin Valleys
Amador County	Mountain Counties
Butte County	Sacramento Valley
Calaveras County	Mountain Counties
Colusa County	Sacramento Valley
Contra Costa County	San Francisco Bay Area
Del Norte County	North Coast
El Dorado County	Lake Tahoe; Mountain Counties
Fresno County	San Joaquin Valley
Glenn County	Sacramento Valley
Humboldt County	North Coast
Imperial County	Salton Sea
Inyo County	Great Basin Valleys
Kern County	Mojave Desert; San Joaquin Valley
Kings County	San Joaquin Valley
Lake County	Lake County
Lassen County	Northeast Plateau
Los Angeles County	Mojave Desert; South Coast
Madera County	San Joaquin Valley
Marin County	San Francisco Bay Area

<b>County</b>	<b>Air Basin(s)</b>
Mariposa County	Mountain Counties
Mendocino County	North Coast
Merced County	San Joaquin Valley
Modoc County	Northeast Plateau
Mono County	Great Basin Valleys
Monterey County	North Central Coast
Napa County	San Francisco Bay Area
Nevada County	Mountain Counties
Orange County	South Coast
Placer County	Lake Tahoe; Mountain Counties; Sacramento Valley
Plumas County	Mountain Counties
Riverside County	Mojave Desert; Salton Sea; South Coast
Sacramento County	Sacramento Valley
San Benito County	North Central Coast
San Bernardino County	Mojave Desert; South Coast
San Diego County	San Diego
San Francisco County	San Francisco Bay Area
San Joaquin County	San Joaquin Valley
San Luis Obispo County	South Central Coast

<b>County</b>	<b>Air Basin(s)</b>
San Mateo County	San Francisco Bay Area
Santa Barbara County	South Central Coast
Santa Clara County	San Francisco Bay Area
Santa Cruz County	North Central Coast
Shasta County	Sacramento Valley
Sierra County	Mountain Counties
Siskiyou County	Northeast Plateau
Solano County	Sacramento Valley; San Francisco Bay Area
Sonoma County	North Coast; San Francisco Bay Area
Stanislaus County	San Joaquin Valley
Sutter County	Sacramento Valley
Tehama County	Sacramento Valley
Trinity County	North Coast
Tulare County	San Joaquin Valley
Tuolumne County	Mountain Counties
Ventura County	South Central Coast
Yolo County	Sacramento Valley
Yuba County	Sacramento Valley

**Table 7: Air District - County****Table A-3**

<b>Air District</b>	<b>Counties</b>
Amador County APCD	Amador
Antelope Valley AQMD	Northeast portion of Los Angeles County
Bay Area AQMD	Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, western portion of Solano, southern portion of Sonoma counties
Butte County AQMD	Butte
Calaveras County APCD	Calaveras
Colusa County APCD	Colusa
El Dorado County AQMD	El Dorado
Feather River AQMD	all of Sutter and Yuba counties
Glenn County APCD	Glenn
Great Basin Unified APCD	All of Alpine, Inyo, and Mono counties
Imperial County APCD	Imperial
Kern County APCD	Eastern portion of Kern County
Lake County AQMD	Lake
Lassen County APCD	Lassen
Mariposa County APCD	Mariposa
Mendocino County AQMD	Mendocino
Modoc County APCD	Modoc
Mojave Desert AQMD	Northern portion of San Bernardino County, eastern portion of Riverside County
Monterey Bay Unified APCD	All of Monterey, San Benito, Santa Cruz counties
North Coast Unified AQMD	All of Del Norte, Humboldt, Trinity counties
Northern Sierra AQMD	All of Nevada, Plumas, Sierra counties
Northern Sonoma County APCD	Northern portion of Sonoma County
Placer County APCD	Placer
Sacramento Metropolitan AQMD	Sacramento
San Diego County APCD	San Diego
San Joaquin Valley Unified APCD	All of Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus, Tulare, and western portion of Kern counties
San Luis Obispo County APCD	San Luis Obispo
Santa Barbara County APCD	Santa Barbara
Shasta County AQMD	Shasta
Siskiyou County APCD	Siskiyou
South Coast AQMD	Los Angeles County except for Antelope Valley AQMD, Orange County, western portion of San Bernardino and western portion of Riverside counties
Tehama County APCD	Tehama
Tuolumne County APCD	Tuolumne
Ventura County APCD	Ventura
Yolo-Solano AQMD	All of Yolo and eastern portion of Solano counties

**Table 8: Air District - Air Basin**

<b>Air District</b>	<b>Air Basin(s)</b>
Antelope Valley	South Coast Mojave Desert
El Dorado	Lake Tahoe Mountain Counties
Placer	Lake Tahoe Mountain Counties Sac Valley
Sacramento Metro	Sac Valley
San Diego	San Diego
San Joaquin Valley Unified	San Joaquin Valley Mojave Desert
Santa Barbara	South Central Coast
SF Bay Area	SF Bay Area North Coast
Shasta	Sac Valley
South Coast	South Coast Mojave Desert Salton Sea
Tehama	Sac Valley
Ventura	South Central Coast
Yolo/Solano	Sac Valley SF Bay Area

**Table 9: Natural Source ROGs**

**Air Basin  
Natural Source  
(tons/day)  
Annual average ROG**

County	Natural Sources Total	Biogenic	Geogenic	Wildfires
<b>Great Basin Valleys Air Basin</b>				
Alpine	9	9	0	0
Inyo	7	7	0	0
Mono	21	21	0	0
<b>Basin Total</b>	<b>37</b>	<b>36</b>	<b>0</b>	<b>1</b>
<b>Lake County Air Basin</b>				
<b>Lake</b>	<b>64</b>	<b>55</b>	<b>0</b>	<b>9</b>
<b>Lake Tahoe Air Basin</b>				
*El Dorado	2	2	0	0
*Placer	1	1	0	0
<b>Basin Total</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>0</b>
<b>Mojave Desert Air Basin</b>				
*Kern	25	23	0	3
*Los Angeles	6	6	0	0
*Riverside	0	0	0	0
*San Bernardino	8	6	0	1
<b>Basin Total</b>	<b>39</b>	<b>36</b>	<b>0</b>	<b>4</b>
<b>Mountain Counties Air Basin</b>				
Amador	15	15	0	0
Calaveras	39	38	0	1
*El Dorado	50	49	0	0
Mariposa	36	35	0	1
Nevada	36	36	0	1
*Placer	28	26	0	2
Plumas	51	43	0	8
Sierra	20	17	0	3

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County	Natural Sources Total	Biogenic	Geogenic	Wildfires
Tuolumne	54	46	0	8
<b>Basin Total</b>	<b>330</b>	<b>305</b>	<b>0</b>	<b>25</b>

**North Central Coast Air Basin**

Monterey	51	50	0	1
San Benito	17	17	0	0
Santa Cruz	5	5	0	0
<b>Basin Total</b>	<b>73</b>	<b>72</b>	<b>0</b>	<b>1</b>

**North Coast Air Basin**

Del Norte	27	24	0	3
Humboldt	86	81	0	5
Mendocino	118	117	0	0
*Sonoma	23	23	0	0
Trinity	119	118	0	2
<b>Basin Total</b>	<b>373</b>	<b>363</b>	<b>0</b>	<b>9</b>

**Northeast Plateau Air Basin**

Lassen	59	56	0	3
Modoc	57	54	0	3
Siskiyou	166	159	0	8
<b>Basin Total</b>	<b>283</b>	<b>269</b>	<b>0</b>	<b>13</b>

**Sacramento Valley Air Basin**

Butte	44	41	0	3
Colusa	23	22	0	1
Glenn	19	17	0	3
*Placer	7	7	0	0
Sacramento	10	10	0	0
Shasta	167	166	0	1
*Solano	4	4	0	0
Sutter	3	3	0	0
Tehama	71	66	0	4
Yolo	16	15	0	0
Yuba	15	15	0	0
<b>Basin Total</b>	<b>379</b>	<b>367</b>	<b>0</b>	<b>12</b>

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County	Natural Sources Total	Biogenic	Geogenic	Wildfires
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**Salton Sea Air Basin**

Imperial	3	3	0	0
*Riverside	8	7	0	1
<b>Basin Total</b>	<b>11</b>	<b>10</b>	<b>0</b>	<b>1</b>

**San Diego Air Basin**

<b>San Diego</b>	<b>76</b>	<b>67</b>	<b>0</b>	<b>9</b>
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**San Francisco Bay Area Air Basin**

Alameda	11	11	0	0
Contra Costa	11	11	0	0
Marin	7	7	0	0
Napa	27	26	0	1
San Francisco	1	1	0	0
San Mateo	7	7	0	0
Santa Clara County	29	29	0	0
*Solano	3	3	0	0
*Sonoma	10	10	0	0
<b>Basin Total</b>	<b>106</b>	<b>105</b>	<b>0</b>	<b>1</b>

**San Joaquin Valley Air Basin**

Fresno	64	63	0	1
*Kern	19	18	0	1
Kings	4	4	0	0
Madera	38	38	0	0
Merced	6	6	0	0
San Joaquin	8	8	0	0
Stanislaus	13	12	0	1
Tulare	82	61	0	21
<b>Basin Total</b>	<b>235</b>	<b>211</b>	<b>0</b>	<b>24</b>

**South Central Coast Air Basin**

San Luis Obispo	36	32	0	4
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County	Natural Sources Total	Biogenic	Geogenic	Wildfires
Santa Barbara	54	35	19	0
Ventura	33	26	4	3
<b>Basin Total</b>	123	93	23	8

**South Coast Air Basin**

*Los Angeles	34	30	0	4
Orange	9	9	0	0
*Riverside	24	22	0	2
*San Bernardino	19	15	0	4
<b>Basin Total</b>	86	76	0	11

\* These counties are in more than one air basin. Total all separate air basin values for these counties to get a total county value.

**Table 10: Non-natural ROG Emissions**

**Air Basin ROG Emissions**

(tons/day)  
Annual average  
Trend Data

County	1975	1980	1985	1990	1995	2000	2005	2010	2015	2020
<b>Great Basin Valleys Air Basin</b>										
Alpine	5	5	5	5	6	6	6	6	6	6
Inyo**	7	7	7	6	5	4	4	4	4	3
Mono**	7	8	8	8	8	8	8	8	8	8
<b>Basin Total</b>	<b>19</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>19</b>	<b>18</b>	<b>18</b>	<b>18</b>	<b>18</b>	<b>18</b>
<b>Lake County Air Basin</b>										
<b>Lake</b>	<b>11</b>	<b>13</b>	<b>15</b>	<b>14</b>	<b>14</b>	<b>12</b>	<b>11</b>	<b>9</b>	<b>8</b>	<b>8</b>
<b>Lake Tahoe Air Basin</b>										
*El Dorado	8	7	7	7	6	6	5	5	5	5
*Placer	6	3	3	3	3	3	2	2	2	2
<b>Basin Total</b>	<b>14</b>	<b>9</b>	<b>9</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>8</b>	<b>7</b>	<b>7</b>	<b>7</b>
<b>Mojave Desert Air Basin</b>										
*Kern	65	47	32	28	17	15	13	12	11	11
*Los Angeles	37	40	42	43	29	24	23	22	23	25
*Riverside	7	7	9	4	3	2	3	4	4	4
*San Bernardino	33	39	48	62	52	43	39	35	33	33
<b>Basin Total</b>	<b>142</b>	<b>133</b>	<b>130</b>	<b>137</b>	<b>101</b>	<b>84</b>	<b>78</b>	<b>72</b>	<b>71</b>	<b>73</b>
<b>Mountain Counties Air Basin</b>										
Amador	10	11	11	12	10	9	9	8	8	8
Calaveras	9	10	11	12	13	12	10	9	8	7
*El Dorado	17	24	23	22	19	15	13	12	11	11
Mariposa	7	8	8	8	9	8	7	6	6	5

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County	1975	1980	1985	1990	1995	2000	2005	2010	2015	2020
Nevada	14	19	21	20	17	15	14	13	12	12
*Placer	4	9	5	5	4	4	4	3	3	3
Plumas	12	15	14	15	17	17	16	16	16	17
Sierra	3	3	3	3	4	4	4	4	3	3
Tuolumne	27	29	29	30	29	27	26	25	24	24
<b>Basin Total</b>	<b>101</b>	<b>126</b>	<b>125</b>	<b>129</b>	<b>122</b>	<b>111</b>	<b>103</b>	<b>95</b>	<b>91</b>	<b>90</b>
<b>North Central Coast Air Basin</b>										
Monterey	96	79	74	67	56	48	42	39	37	37
San Benito	11	11	11	11	9	8	7	7	7	7
Santa Cruz	44	43	44	40	30	26	22	20	20	20
<b>Basin Total</b>	<b>153</b>	<b>133</b>	<b>129</b>	<b>118</b>	<b>95</b>	<b>82</b>	<b>71</b>	<b>66</b>	<b>64</b>	<b>63</b>
<b>North Coast Air Basin</b>										
Del Norte	10	11	8	7	6	6	6	5	5	5
Humboldt	65	41	34	31	25	22	20	18	17	17
Mendocino	31	26	20	19	17	15	13	12	11	11
*Sonoma	14	22	21	23	19	16	13	11	10	10
Trinity	7	8	6	6	6	6	5	5	4	4
<b>Basin Total</b>	<b>127</b>	<b>108</b>	<b>88</b>	<b>87</b>	<b>74</b>	<b>65</b>	<b>56</b>	<b>51</b>	<b>47</b>	<b>46</b>
<b>Northeast Plateau Air Basin</b>										
Lassen	11	15	15	14	13	12	12	11	11	11
Modoc	6	7	6	6	5	4	4	4	4	4
Siskiyou	29	29	28	28	26	23	22	22	21	21
<b>Basin Total</b>	<b>46</b>	<b>50</b>	<b>48</b>	<b>47</b>	<b>44</b>	<b>40</b>	<b>39</b>	<b>37</b>	<b>36</b>	<b>36</b>
<b>Sacramento Valley Air Basin</b>										
Butte	41	43	42	41	34	28	25	22	21	21
Colusa	12	10	12	10	8	7	7	7	7	7
Glenn	15	15	14	12	12	10	10	9	9	9

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County	1975	1980	1985	1990	1995	2000	2005	2010	2015	2020
*Placer	35	32	34	30	28	23	20	19	18	18
Sacramento	212	195	173	145	114	86	67	59	55	53
Shasta	38	42	41	39	32	28	25	23	21	21
*Solano	12	16	15	16	14	12	9	8	7	7
Sutter	20	19	20	18	15	13	12	12	11	12
Tehama	14	15	15	14	11	9	8	8	7	7
Yolo	36	33	28	23	20	16	13	12	11	11
Yuba	14	17	14	12	11	10	9	8	7	7
<b>Basin Total</b>	<b>448</b>	<b>438</b>	<b>408</b>	<b>362</b>	<b>299</b>	<b>243</b>	<b>205</b>	<b>185</b>	<b>175</b>	<b>171</b>
<b>Salton Sea Air Basin</b>										
Imperial	46	46	37	38	37	32	31	30	29	29
*Riverside	37	38	41	31	25	21	17	15	15	16
<b>Basin Total</b>	<b>83</b>	<b>84</b>	<b>78</b>	<b>68</b>	<b>62</b>	<b>53</b>	<b>48</b>	<b>45</b>	<b>45</b>	<b>45</b>
<b>San Diego Air Basin</b>										
<b>San Diego</b>	<b>439</b>	<b>437</b>	<b>413</b>	<b>343</b>	<b>267</b>	<b>226</b>	<b>186</b>	<b>173</b>	<b>168</b>	<b>170</b>
<b>San Francisco Bay Area Air Basin</b>										
Alameda	287	258	215	163	133	106	81	73	67	64
Contra Costa	242	246	189	127	111	97	67	58	55	53
Marin	53	49	42	32	27	22	18	14	12	11
Napa	25	22	20	17	15	16	11	9	8	8
San Francisco	144	123	99	72	59	48	37	33	29	28
San Mateo	158	141	114	83	70	52	40	35	32	30
Santa Clara County	336	316	246	180	148	117	89	77	69	64
*Solano	58	64	53	42	33	27	21	19	18	17
*Sonoma	62	58	51	41	36	29	23	20	18	17
<b>Basin Total</b>	<b>1366</b>	<b>1278</b>	<b>1029</b>	<b>756</b>	<b>631</b>	<b>513</b>	<b>387</b>	<b>337</b>	<b>307</b>	<b>292</b>

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County	1975	1980	1985	1990	1995	2000	2005	2010	2015	2020
<b>San Joaquin Valley Air Basin</b>										
Fresno	181	166	140	128	111	94	81	76	74	74
*Kern	598	718	601	200	116	104	87	82	78	77
Kings	31	28	25	22	23	19	18	18	18	19
Madera	43	26	24	24	22	20	19	18	17	17
Merced	53	50	41	45	38	35	31	30	29	30
San Joaquin	105	95	86	81	69	58	46	41	40	40
Stanislaus	76	71	66	71	61	54	46	43	42	43
Tulare	112	107	102	100	95	89	85	82	82	83
<b>Basin Total</b>	<b>1199</b>	<b>1261</b>	<b>1086</b>	<b>671</b>	<b>536</b>	<b>473</b>	<b>413</b>	<b>389</b>	<b>380</b>	<b>382</b>
<b>South Central Coast Air Basin</b>										
San Luis Obispo	45	49	52	43	34	30	26	24	23	23
Santa Barbara	82	77	80	76	57	47	41	37	35	34
Ventura	105	113	103	89	72	61	48	43	40	39
<b>Basin Total</b>	<b>232</b>	<b>239</b>	<b>236</b>	<b>208</b>	<b>163</b>	<b>137</b>	<b>116</b>	<b>104</b>	<b>98</b>	<b>96</b>
<b>South Coast Air Basin</b>										
*Los Angeles	1898	1538	1488	1133	829	648	406	332	299	281
Orange	462	441	452	345	260	210	135	114	104	98
*Riverside	123	122	130	134	111	95	69	59	57	57
*San Bernardino	159	170	175	147	119	102	73	61	57	56
<b>Basin Total</b>	<b>2642</b>	<b>2270</b>	<b>2245</b>	<b>1761</b>	<b>1320</b>	<b>1058</b>	<b>684</b>	<b>565</b>	<b>515</b>	<b>490</b>

\* These counties are in more than one air basin. Total all separate air basin values for these counties to get a total county value.

\*\* Values for these counties include emissions from the Owens and Mono Lake Beds.

Figure 5: State Ozone Designations

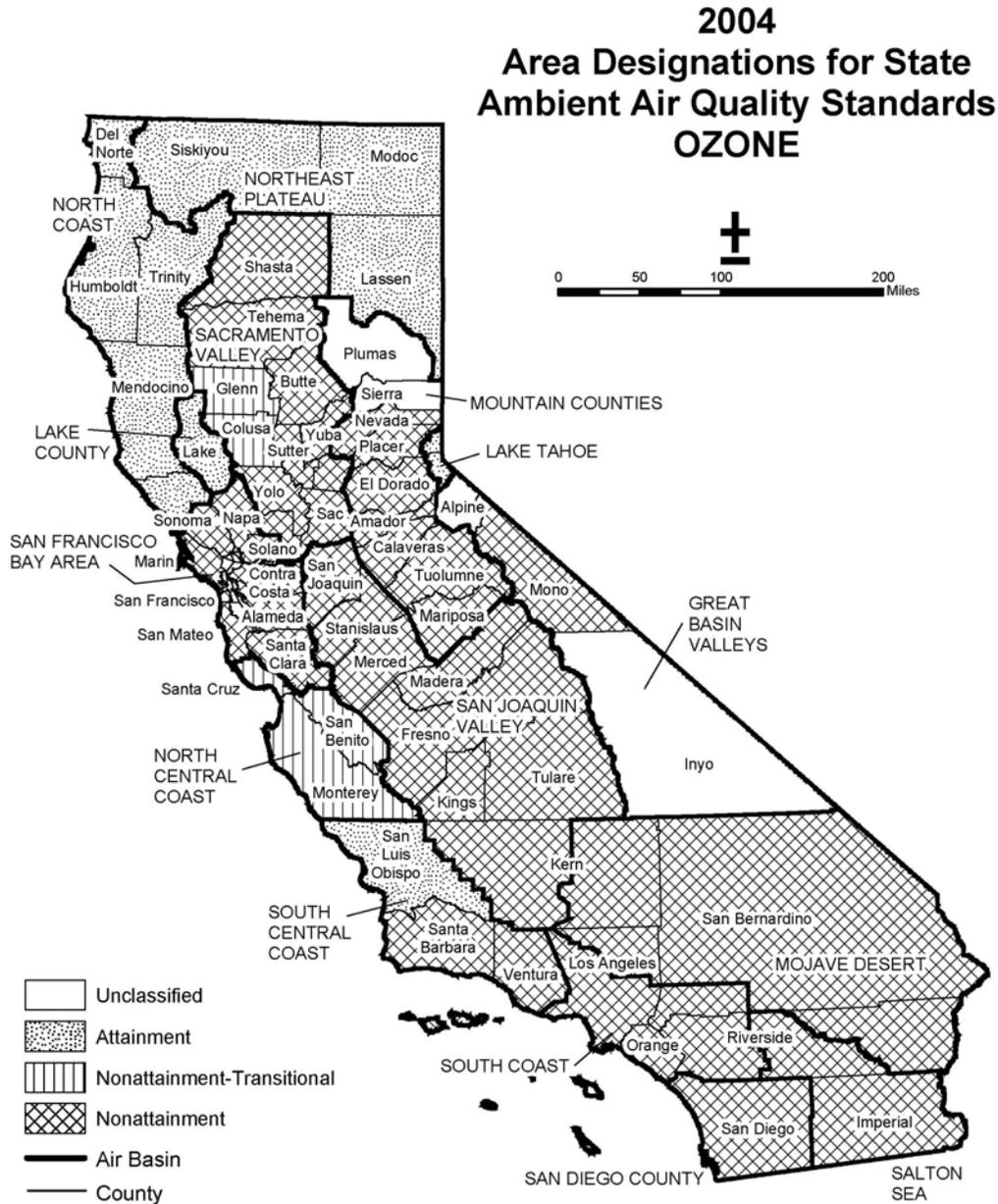


Figure 6: National 1-hour Ozone Designations



January 2006  
Emission Inventory Branch, PTSD  
N:\Designations\Maps\2005\Federal-Neva\Fed\_1hr\_desig.mxd

Figure 7: National 8-hour Ozone Designations



January 2006  
Emission Inventory Branch, PTSD  
N:\Designations\Maps\2005\Federal-Neva\fed\_8hr\_desig.mxd

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Table 11: 3 Year Average Unit Mix

	3-Year Annual Avg (2003 - 05)						2003			2004			2005		
	Total	% Total	SF	% SF	MF	%MF	SF	MF	TOTAL	SF	MF	TOTAL	SF	MF	TOTAL
Alameda	4,876	2.37%	1,958	0.95%	2,918	1.42%	2,087	2,433	4,520	2,269	3,422	5,691	1,518	2,898	4,416
Alpine	22	0.01%	22	0.01%	-	0.00%	28	-	28	22	-	22	16	-	16
Amador	428	0.21%	362	0.18%	65	0.03%	381	22	403	367	174	541	339	-	339
Butte	1,839	0.89%	1,495	0.73%	344	0.17%	1,493	332	1,825	1,498	495	1,993	1,494	206	1,700
Calaveras	794	0.39%	785	0.38%	9	0.00%	678	10	688	825	6	831	852	11	863
Colusa	180	0.09%	150	0.07%	30	0.01%	113	89	202	191	2	193	145	-	145
Contra Costa	6,230	3.03%	4,880	2.37%	1,350	0.66%	4,965	1,930	6,895	4,222	1,261	5,483	5,452	860	6,312
Del Norte	148	0.07%	113	0.06%	35	0.02%	113	14	127	121	77	198	106	14	120
El Dorado	1,955	0.95%	1,844	0.90%	111	0.05%	1,911	28	1,939	2,055	141	2,196	1,566	165	1,731
Fresno	6,941	3.37%	5,367	2.61%	1,575	0.76%	4,479	1,520	5,999	5,376	1,574	6,950	6,245	1,630	7,875
Glenn	169	0.08%	142	0.07%	27	0.01%	91	51	142	122	28	150	212	2	214
Humboldt	513	0.25%	445	0.22%	68	0.03%	378	46	424	496	115	611	461	42	503
Imperial	2,114	1.03%	1,676	0.81%	438	0.21%	977	234	1,211	1,330	827	2,157	2,722	252	2,974
Inyo	16	0.01%	16	0.01%	-	0.00%	19	-	19	17	-	17	11	-	11
Kern	7,672	3.73%	6,820	3.31%	853	0.41%	5,529	583	6,112	6,653	802	7,455	8,277	1,173	9,450
Kings	999	0.49%	871	0.42%	128	0.06%	835	143	978	728	124	852	1,050	116	1,166
Lake	554	0.27%	474	0.23%	80	0.04%	398	122	520	521	111	632	503	6	509
Lassen	189	0.09%	184	0.09%	5	0.00%	177	6	183	210	-	210	164	9	173
Los Angeles	24,632	11.96%	11,293	5.49%	13,338	6.48%	10,217	11,096	21,313	11,752	15,183	26,935	11,911	13,736	25,647
Madera	1,757	0.85%	1,576	0.77%	181	0.09%	1,144	90	1,234	1,451	207	1,658	2,133	246	2,379
Marin	738	0.36%	521	0.25%	217	0.11%	652	60	712	585	442	1,027	326	150	476
Mariposa	159	0.08%	157	0.08%	7	0.00%	135	2	137	175	-	175	162	2	164
Mendocino	344	0.17%	326	0.16%	86	0.04%	378	4	382	318	32	350	281	19	300
Merced	3,087	1.50%	2,842	1.38%	172	0.08%	2,489	457	2,946	2,518	58	2,576	3,518	222	3,740
Modoc	24	0.01%	24	0.01%	120	0.06%	35	-	35	14	-	14	23	-	23
Mono	359	0.17%	131	0.06%	159	0.08%	95	223	318	126	100	226	173	361	534
Monterey	1,332	0.65%	1,110	0.54%	211	0.10%	1,063	322	1,385	1,085	191	1,276	1,181	154	1,335
Napa	742	0.36%	596	0.29%	151	0.07%	593	56	649	661	263	924	533	120	653
Nevada	907	0.44%	727	0.35%	1,184	0.58%	709	203	912	777	202	979	696	133	829
Orange	8,613	4.18%	4,673	2.27%	3,036	1.47%	5,565	3,746	9,311	4,395	4,927	9,322	4,058	3,148	7,206
Placer	5,147	2.50%	4,757	2.31%	245	0.12%	4,670	584	5,254	4,743	151	4,894	4,858	436	5,294
Plumas	267	0.13%	263	0.13%	1,384	0.67%	260	3	263	262	8	270	267	-	267

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 Table 11: 3 Year Average Unit Mix  
 Continued

	3-Year Annual Avg (2003 - 05)						2003			2004			2005		
	Total	% Total	SF	% SF	MF	%MF	SF	MF	TOTAL	SF	MF	TOTAL	SF	MF	TOTAL
Riverside	32,907	15.98%	28,203	13.70%	3,961	1.92%	25,137	5,224	30,361	29,478	4,748	34,226	29,994	4,140	34,134
Sacramento	12,181	5.92%	9,506	4.62%	2,052	1.00%	10,493	3,340	13,833	10,185	2,777	12,962	7,839	1,910	9,749
San Benito	112	0.05%	99	0.05%	460	0.22%	98	-	98	112	-	112	86	40	126
San Bernardino	15,931	7.74%	13,372	6.50%	4,551	2.21%	10,820	1,820	12,640	13,991	4,479	18,470	15,305	1,379	16,684
San Diego	16,959	8.24%	8,971	4.36%	6,427	3.12%	9,455	8,859	18,314	9,555	7,751	17,306	7,904	7,354	15,258
San Francisco	2,225	1.08%	64	0.03%	1,371	0.67%	73	1,509	1,582	65	2,303	2,368	53	2,671	2,724
San Joaquin	6,703	3.26%	6,359	3.09%	351	0.17%	6,727	225	6,952	6,378	508	6,886	5,972	300	6,272
San Luis Obispo	2,143	1.04%	1,822	0.89%	369	0.18%	1,943	279	2,222	1,900	363	2,263	1,624	321	1,945
San Mateo	1,102	0.54%	598	0.29%	440	0.21%	735	569	1,304	633	478	1,111	427	465	892
Santa Barbara	1,365	0.66%	963	0.47%	1,409	0.68%	1,240	377	1,617	961	556	1,517	688	272	960
Santa Clara	6,289	3.05%	2,529	1.23%	2,737	1.33%	2,320	5,170	7,490	2,689	2,816	5,505	2,577	3,295	5,872
Santa Cruz	967	0.47%	687	0.33%	286	0.14%	654	548	1,202	739	65	804	669	225	894
Shasta	1,319	0.64%	1,096	0.53%	142	0.07%	1,064	274	1,338	888	151	1,039	1,337	244	1,581
Sierra	17	0.01%	17	0.01%	62	0.03%	20	-	20	18	-	18	14	-	14
Siskiyou	337	0.16%	239	0.12%	167	0.08%	205	14	219	222	94	316	290	186	476
Solano	2,751	1.34%	2,238	1.09%	837	0.41%	2,134	544	2,678	2,418	604	3,022	2,161	392	2,553
Sonoma	2,428	1.18%	1,457	0.71%	594	0.29%	1,388	951	2,339	1,343	598	1,941	1,639	1,364	3,003
Stanislaus	4,498	2.18%	4,160	2.02%	276	0.13%	3,884	284	4,168	4,106	497	4,603	4,489	234	4,723
Sutter	1,206	0.59%	1,130	0.55%	68	0.03%	835	156	991	1,275	25	1,300	1,280	48	1,328
Tehama	574	0.28%	558	0.27%	8	0.00%	417	13	430	628	12	640	629	24	653
Trinity	67	0.03%	64	0.03%	135	0.07%	53	10	63	78	-	78	60	-	60
Tulare	2,842	1.38%	2,456	1.19%	257	0.12%	1,993	397	2,390	2,384	367	2,751	2,992	394	3,386
Tuolumne	380	0.18%	368	0.18%	651	0.32%	354	2	356	371	28	399	378	6	384
Ventura	3,585	1.74%	2,219	1.08%	842	0.41%	2,342	1,293	3,635	1,721	882	2,603	2,593	1,923	4,516
Yolo	1,899	0.92%	1,391	0.68%	390	0.19%	1,110	653	1,763	1,697	518	2,215	1,366	352	1,718
Yuba	1,337	0.65%	1,337	0.65%	-	0.00%	611	-	611	1,697	-	1,697	1,703	-	1,703
<b>CALIFORNIA</b>	<b>205,871</b>	<b>100.0%</b>	<b>148,500</b>	<b>72.13%</b>	<b>57,371</b>	<b>27.87%</b>	<b>138,762</b>	<b>56,920</b>	<b>195,682</b>	<b>151,417</b>	<b>61,543</b>	<b>212,960</b>	<b>155,322</b>	<b>53,650</b>	<b>208,972</b>
					<b>100.00%</b>										
Source:															
DOF May Revision Forecast (April 2006)															
UCLA Anderson Report, Dec 2005															
CIRB, June 29, 2006															

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Table 12: 2007 Housing Calculations

County	% SF units from 3 year average (03 - 06) (% of total CA units)	% MF units from 3 year average (03 - 06) (% of total CA units)	Estimated total SF units 2007	Estimated total MF units 2007	Estimated total SF units re-pipes 2007	Estimated total MF units re-pipes 2007	Estimated total SF units 2007	Estimated total MF units 2007	Estimated County CPVC SF Units 2007	Estimated County CPVC MF Units 2007
Alameda	0.95%	1.42%	1719	2561	951	1417	2670	3978	801	1193
Alpine	0.01%	0.00%	19	0	11	0	30	0	9	0
Amador	0.18%	0.03%	318	57	176	32	494	89	148	27
Butte	0.73%	0.17%	1312	302	726	167	2038	469	612	141
Calaveras	0.38%	0.00%	689	8	381	4	1070	12	321	4
Colusa	0.07%	0.01%	131	27	73	15	204	41	61	12
Contra Costa	2.37%	0.66%	4283	1185	2370	656	6653	1841	1996	552
Del Norte	0.06%	0.02%	99	31	55	17	155	48	46	14
El Dorado	0.90%	0.05%	1619	98	896	54	2514	152	754	46
Fresno	2.61%	0.76%	4711	1382	2607	765	7317	2147	2195	644
Glenn	0.07%	0.01%	124	24	69	13	193	37	58	11
Humboldt	0.22%	0.03%	391	59	216	33	607	92	182	28
Imperial	0.81%	0.21%	1471	384	814	213	2286	597	686	179
Inyo	0.01%	0.00%	14	0	8	0	21	0	6	0
Kern	3.31%	0.41%	5986	748	3313	414	9298	1163	2790	349
Kings	0.42%	0.06%	765	112	423	62	1188	174	356	52
Lake	0.23%	0.04%	416	70	230	39	646	109	194	33
Lassen	0.09%	0.00%	161	4	89	2	250	7	75	2
Los Angeles	5.49%	6.48%	9913	11708	5486	6479	15398	18186	4619	5456
Madera	0.77%	0.09%	1383	159	766	88	2149	247	645	74
Marin	0.25%	0.11%	457	191	253	106	710	296	213	89
Mariposa	0.08%	0.00%	138	6	76	3	215	10	64	3
Mendocino	0.16%	0.04%	286	75	158	42	444	117	133	35
Merced	1.38%	0.08%	2494	151	1380	83	3875	234	1162	70
Modoc	0.01%	0.06%	21	106	12	58	33	164	10	49
Mono	0.06%	0.08%	115	140	64	77	179	217	54	65
Monterey	0.54%	0.10%	974	185	539	102	1513	288	454	86
Napa	0.29%	0.07%	523	132	289	73	812	205	244	62
Nevada	0.35%	0.58%	638	1040	353	575	992	1615	298	484
Orange	2.27%	1.47%	4101	2665	2270	1475	6371	4140	1911	1242
Placer	2.31%	0.12%	4175	215	2311	119	6486	334	1946	100
Plumas	0.13%	0.67%	231	1214	128	672	359	1887	108	566
Riverside	13.70%	1.92%	24755	3476	13699	1924	38454	5400	11536	1620
Sacramento	4.62%	1.00%	8343	1801	4617	997	12961	2798	3888	839
San Benito	0.05%	0.22%	87	403	48	223	135	627	40	188
San Bernardino	6.50%	2.21%	11737	3995	6495	2211	18232	6205	5470	1862
San Diego	4.36%	3.12%	7874	5641	4358	3122	12232	8763	3670	2629
San Francisco	0.03%	0.67%	56	1203	31	666	87	1869	26	561
San Joaquin	3.09%	0.17%	5582	308	3089	171	8670	479	2601	144
San Luis Obispo	0.89%	0.18%	1600	324	885	179	2485	503	745	151
San Mateo	0.29%	0.21%	525	386	291	214	816	599	245	180
Santa Barbara	0.47%	0.68%	845	1237	468	685	1313	1922	394	576
Santa Clara	1.23%	1.33%	2219	2402	1228	1329	3448	3732	1034	1120
Santa Cruz	0.33%	0.14%	603	251	334	139	937	389	281	117
Shasta	0.53%	0.07%	962	124	533	69	1495	193	448	58
Sierra	0.01%	0.03%	15	54	8	30	24	85	7	25
Siskiyou	0.12%	0.08%	210	146	116	81	326	227	98	68
Solano	1.09%	0.41%	1964	735	1087	407	3051	1142	915	343
Sonoma	0.71%	0.29%	1279	522	708	289	1986	810	596	243
Stanislaus	2.02%	0.13%	3651	243	2021	134	5672	377	1701	113
Sutter	0.55%	0.03%	992	60	549	33	1541	93	462	28
Tehama	0.27%	0.00%	490	7	271	4	761	11	228	3
Trinity	0.03%	0.07%	56	118	31	65	87	184	26	55
Tulare	1.19%	0.12%	2156	225	1193	125	3349	350	1005	105
Tuolumne	0.18%	0.32%	323	571	179	316	501	888	150	266
Ventura	1.08%	0.41%	1947	739	1078	409	3025	1149	908	345
Yolo	0.68%	0.19%	1221	343	676	190	1897	532	569	160
Yuba	0.65%	0.00%	1174	0	649	0	1823	0	547	0
<b>TOTAL</b>	<b>72.13%</b>	<b>27.87%</b>	<b>130344</b>	<b>50356</b>	<b>72133</b>	<b>27867</b>	<b>202477</b>	<b>78223</b>	<b>60743</b>	<b>23467</b>
	100%		180700		100000		280700		84210	

Table 13: Adhesive Calculations

<b>Single Family Unit, approximately 2200 sq. ft.</b>			
<b>Cement (liters)</b>		<b>Source</b>	<b>E-Z Weld</b>
	<b>Source</b>	<b>Estimate</b>	<b>Calc tool</b>
	Doc.191	0.35	0.90
	Doc.206**	0.76	0.75
	Doc.207*	0.47	0.70
	Doc.192	0.35	0.90
	Doc.189	0.24	0.79
	average	<b>0.43</b>	<b>0.81</b>
	std dev	0.18	0.08
<b>Primer (liters)</b>			
	<b>Source</b>		
	Doc.191	0.12	0.30
	Doc.206**	0.25	0.25
	Doc.207*	0.16	0.23
	Doc.192	0.12	0.30
	Doc.189	0.24	0.26
	average	<b>0.18</b>	<b>0.27</b>
	std dev	0.06	0.03
<b>Multifamily Unit</b>			
<b>Cement (liters)</b>		<b>Source</b>	<b>E-Z Weld</b>
	<b>Source</b>	<b>Estimate</b>	<b>Calc tool</b>
	Doc.190*	0.12	0.51
	Doc.197**	0.33	0.33
	average	<b>0.23</b>	<b>0.42</b>
	std dev	0.11	0.09
<b>Primer (liters)</b>			
	Doc.190*	0.04	0.12
	Doc.197**	0.11	0.11
	average	<b>0.09</b>	<b>0.11</b>
	std dev	0.03	0.01
Doc.190 used 975 sq. ft. as the unit size			
Doc.197 used 1,200 sq. ft. as the unit size			
*Source estimated adhesive using one-step cement (no primer). For estimation purposes, we assume primer use would have been 1/3 the amount of cement.			
** Source used E-Z Weld Calc tool to estimate adhesive use			
Source data was converted to quarts and multiplied by 0.946 to obtain the volume in liters			

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Table 14: 2007 VOC Calculations

County	County CPVC SF Units	County CPVC MF Units	SF + MF cement used (L/year)	SF + MF primer used (L/year)	cement VOC g/year	primer VOC g/year	Total VOC grams/year	Total VOC grams/working day	Total VOC pounds/year	Total VOC lbs/working day	Housing Units per working day
Alameda	801	1193	1,150	348	563491	191138	754629	3019	1664	6.65	7.98
Alpine	9	0	7	2	3572	1336	4,908.02	19.63	10.82	0.04	0.04
Amador	148	27	131	43	64324	23626	87,950.23	351.80	193.90	0.78	0.70
Butte	612	141	554	181	271698	99332	371,029.81	1484.12	817.98	3.27	3.01
Calaveras	321	4	262	87	128202	47906	176,107.42	704.43	388.25	1.55	1.30
Colusa	61	12	55	18	26852	9842	36,693.56	146.77	80.90	0.32	0.29
Contra Costa	1996	552	1,849	600	905881	329822	1,235,702.82	4942.81	2724.26	10.90	10.19
Del Norte	46	14	44	14	21346	7750	29,096.22	116.38	64.15	0.26	0.24
El Dorado	754	46	630	209	308744	114765	423,508.62	1694.03	933.68	3.73	3.20
Fresno	2195	644	2,049	664	1003830	364955	1,368,784.72	5475.14	3017.65	12.07	11.36
Glenn	58	11	52	17	25272	9273	34,545.73	138.18	76.16	0.30	0.28
Humboldt	182	28	159	52	77942	28705	106,646.65	426.59	235.12	0.94	0.84
Imperial	686	179	631	205	308994	112656	421,650.41	1686.60	929.58	3.72	3.46
Inyo	6	0	5	2	2543	952	3,495.11	13.98	7.71	0.03	0.03
Kern	2790	349	2,406	792	1178944	435347	1,614,291.08	6457.16	3558.90	14.24	12.55
Kings	356	52	311	102	152153	56066	208,219.45	832.88	459.05	1.84	1.63
Lake	194	33	171	56	83660	30764	114,423.45	457.69	252.26	1.01	0.91
Lassen	75	2	62	21	30239	11280	41,519.17	166.08	91.53	0.37	0.31
Los Angeles	4619	5456	6,033	1847	2956295	1016074	3,972,368.58	15889.47	8757.58	35.03	40.30
Madera	645	74	553	182	271099	100210	371,308.67	1485.23	818.60	3.27	2.87
Marin	213	89	210	67	102879	37025	139,904.53	559.62	308.44	1.23	1.21
Mariposa	64	3	53	18	26132	9730	35,862.27	143.45	79.06	0.32	0.27
Mendocino	133	35	123	40	60111	21910	82,021.38	328.09	180.83	0.72	0.67
Merced	1162	70	971	322	475793	176859	652,651.87	2610.61	1438.85	5.76	4.93
Modoc	10	49	29	8	14026	4436	18,461.88	73.85	40.70	0.16	0.24
Mono	54	65	71	22	34707	11912	46,618.95	186.48	102.78	0.41	0.48
Monterey	454	86	404	132	197915	72626	270,541.36	1082.17	596.44	2.39	2.16
Napa	244	62	223	73	109389	39911	149,300.18	597.20	329.15	1.32	1.22
Nevada	298	484	444	134	217780	73489	291,269.21	1165.08	642.14	2.57	3.13
Orange	1911	1242	2,070	653	1014204	358971	1,373,175.48	5492.70	3027.33	12.11	12.61
Placer	1946	100	1,618	536	792918	295017	1,087,935.11	4351.74	2398.49	9.59	8.18
Plumas	108	566	325	91	159176	50217	209,393.23	837.57	461.63	1.85	2.69
Riverside	11536	1620	10,025	3293	4912141	1811145	6,723,285.94	26893.14	14822.31	59.29	52.63
Sacramento	3888	839	3,502	1142	1716003	628190	2,344,193.01	9376.77	5168.06	20.67	18.91
San Benito	40	188	112	32	54714	17369	72,082.31	288.33	158.91	0.64	0.91
San Bernardino	5470	1862	5,212	1682	2554038	924877	3,478,915.16	13915.66	7669.70	30.68	29.33
San Diego	3670	2629	4,077	1280	1997518	703994	2,701,511.46	10806.05	5955.81	23.82	25.19
San Francisco	26	561	257	69	125720	37787	163,507.54	654.03	360.47	1.44	2.35
San Joaquin	2601	144	2,167	718	1061953	394958	1,456,910.87	5827.64	3211.94	12.85	10.98
San Luis Obispo	745	151	667	218	326917	119825	446,742.09	1786.97	984.90	3.94	3.59
San Mateo	245	180	274	86	134150	47225	181,375.29	725.50	399.86	1.60	1.70
Santa Barbara	394	576	561	170	274981	93372	368,353.32	1473.41	812.08	3.25	3.88
Santa Clara	1034	1120	1,308	402	640930	221331	862,260.85	3449.04	1900.96	7.60	8.62
Santa Cruz	281	117	277	89	135636	48820	184,455.55	737.82	406.65	1.63	1.59
Shasta	448	58	388	127	189914	70100	260,014.46	1040.06	573.23	2.29	2.03
Sierra	7	25	16	5	8033	2587	10,620.46	42.48	23.41	0.09	0.13
Siskiyou	98	68	108	34	52832	18642	71,473.61	285.89	157.57	0.63	0.66
Solano	915	343	885	285	433770	156644	590,414.18	2361.66	1301.64	5.21	5.03
Sonoma	596	243	585	188	286520	103190	389,709.96	1558.84	859.16	3.44	3.36
Stanislaus	1701	113	1,426	472	698580	259508	958,088.01	3832.35	2112.22	8.45	7.26
Sutter	462	28	386	128	189207	70330	259,537.16	1038.15	572.18	2.29	1.96
Tehama	228	3	186	62	91292	34101	125,392.96	501.57	276.44	1.11	0.93
Trinity	26	55	44	13	21673	7200	28,872.49	115.49	63.65	0.25	0.32
Tulare	1005	105	858	283	420390	155556	575,946.04	2303.78	1269.74	5.08	4.44
Tuolumne	150	266	234	70	114492	38443	152,935.57	611.74	337.17	1.35	1.67
Ventura	908	345	880	283	431107	155613	586,720.08	2346.88	1293.50	5.17	5.01
Yolo	569	160	528	171	258686	94153	352,838.95	1411.36	777.88	3.11	2.91
Yuba	547	0	443	148	217061	81213	298,273.75	1193.09	657.58	2.63	2.19
<b>TOTAL</b>	<b>60,743</b>	<b>23,467</b>	<b>59,058</b>	<b>18,981.96</b>	<b>28,938,368.81</b>	<b>10,440,076.87</b>	<b>39,378,445.68</b>	<b>157,513.78</b>	<b>86,814.63</b>	<b>347.26</b>	<b>336.84</b>

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Table 15: 2007 VOC Comparisons

County	VOC Operational ToS (lbs/day)	2007 Project VOC lbs/day (365 day year)	2007 Project VOC lbs/working day (250 day year)	2007 Project tons/work day (250 day year)	Biogenic Sources tons/day	Geogenic Sources tons/day	Wildfires tons/day
Alameda	80	4.56	6.65	0.0033	11	0	0
Alpine	250	0.03	0.04	0.0000	9	0	0
Amador		0.53	0.78	0.0004	15	0	0
Butte	25	2.24	3.27	0.0016	41	0	3
Calaveras	550	1.06	1.55	0.0008	38	0	1
Colusa	25	0.22	0.32	0.0002	22	0	1
Contra Costa	80	7.46	10.90	0.0054	11	0	0
Del Norte	268	0.18	0.26	0.0001	24	0	3
El Dorado (Mountain)	82	2.56	3.73	0.0019	49	0	0
El Dorado (Lake Tahoe)					2	0	0
Fresno	55	8.27	12.07	0.0060	63	0	1
Glenn	137	0.21	0.30	0.0002	17	0	3
Humboldt	268	0.64	0.94	0.0005	81	0	5
Imperial	137	2.55	3.72	0.0019	3	0	0
Inyo	250	0.02	0.03	0.0000	7	0	0
Kern (San Joaquin)	137	9.75	14.24	0.0071	18	0	1
Kern (Mojave)	55				23	0	3
Kings	55	1.26	1.84	0.0009	4	0	0
Lake	150	0.69	1.01	0.0005	55	0	9
Lassen		0.25	0.37	0.0002	56	0	3
Los Angeles (South Coast)	137	23.99	35.03	0.0175	30	0	4
Los Angeles (Mojave)	55				6	0	0
Madera	55	2.24	3.27	0.0016	38	0	0
Marin	80	0.85	1.23	0.0006	7	0	0
Mariposa		0.22	0.32	0.0002	35	0	1
Mendocino	220	0.50	0.72	0.0004	117	0	0
Merced	55	3.94	5.76	0.0029	6	0	0
Modoc		0.11	0.16	0.0001	54	0	3
Mono	250	0.28	0.41	0.0002	21	0	0
Monterey	137	1.63	2.39	0.0012	50	0	1
Napa	80	0.90	1.32	0.0007	26	0	1
Nevada	25	1.76	2.57	0.0013	36	0	1

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Table 15: 2007 VOC Comparisons  
Continued

County	VOC Operational ToS (lbs/day)	2007 Project VOC lbs/day (365 day year)	2007 Project VOC lbs/working day (250 day year)	2007 Project tons/work day (250 day year)	Biogenic Sources tons/day	Geogenic Sources tons/day	Wildfires tons/day
Orange	55 75	8.29	12.11	0.0061	9	0	0
Placer (Sac Valley)	82	6.57	9.59	0.0048	7	0	0
Placer (Mountain)					26	0	2
Placer (Lake Tahoe)					1	0	0
Plumas	25	1.26	1.85	0.0009	43	0	8
Riverside (South Coast)	55	40.61	59.29	0.0296	22	0	2
Riverside (Salton Sea)					7	0	1
Riverside (Mojave)	137				0	0	0
Sacramento	65	14.16	20.67	0.0103	10	0	0
San Benito	137	0.44	0.64	0.0003	17	0	0
San Bernardino (South Coast)	55	21.01	30.68	0.0153	15	0	4
San Bernardino (Mojave)	137				6	0	1
San Diego		16.32	23.82	0.0119	67	0	9
San Francisco	80	0.99	1.44	0.0007	1	0	0
San Joaquin	55	8.80	12.85	0.0064	8	0	0
San Luis Obispo	10	2.70	3.94	0.0020	32	0	4
San Mateo	80	1.10	1.60	0.0008	7	0	0
Santa Barbara	240	2.22	3.25	0.0016	35	19	0
Santa Clara	80	5.21	7.60	0.0038	29	0	0
Santa Cruz	137	1.11	1.63	0.0008	5	0	0
Shasta	25	1.57	2.29	0.0011	166	0	1
Sierra	25	0.06	0.09	0.0000	17	0	3
Siskiyou		0.43	0.63	0.0003	159	0	8
Solano (SF Bay)	80	3.57	5.21	0.0026	3	0	0
Solano (Sac Valley)	82				4	0	0
Sonoma (SF Bay)	80	2.35	3.44	0.0017	10	0	0
Sonoma (North Coast)					23	0	0
Stanislaus	55	5.79	8.45	0.0042	12	0	1
Sutter	25	1.57	2.29	0.0011	3	0	0
Tehama	25	0.76	1.11	0.0006	66	0	4
Trinity	268	0.17	0.25	0.0001	118	0	2
Tulare	55	3.48	5.08	0.0025	61	0	21
Tuolumne	1000	0.92	1.35	0.0007	46	0	8
Ventura	5/25/75	3.54	5.17	0.0026	26	4	3
Yolo	82	2.13	3.11	0.0016	15	0	0
Yuba	25	1.80	2.63	0.0013	15	0	0
<b>TOTAL</b>		237.85	347.26	0.1736			

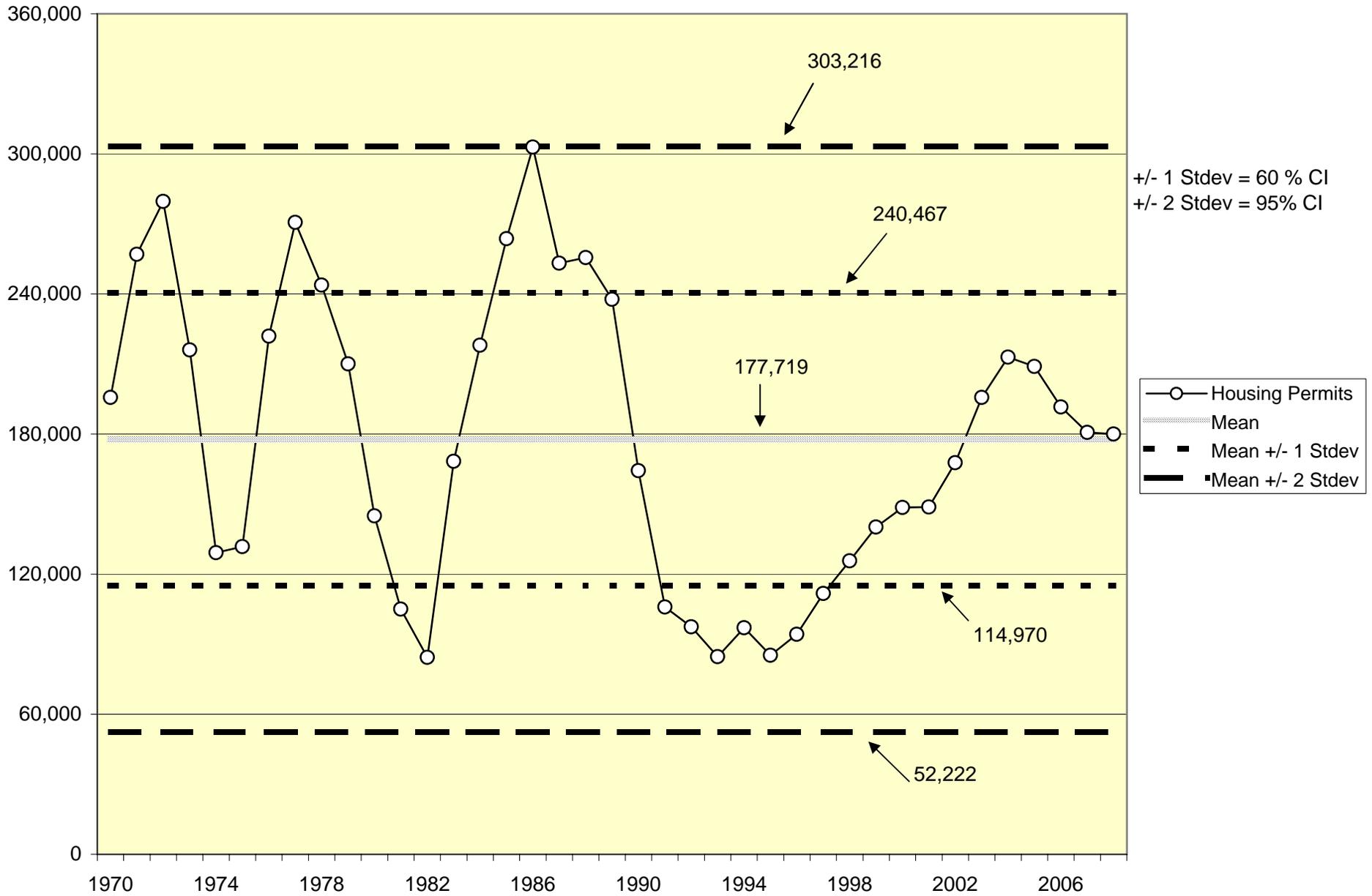
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 Table 16: Housing Permit Forecast 2006-2008

<b>Forecast in Thousands</b>			
	<b>2006</b>	<b>2007</b>	<b>2008</b>
SF	136	134	137
MF	54	41	43
<b>TOTAL</b>	<b>190</b>	<b>175</b>	<b>180</b>
Source: DOF May Revision Forecast (April 2006)			
	<b>2006</b>	<b>2007</b>	
SF	133.3	121.3	
MF	60.3	57.5	
<b>TOTAL</b>	<b>193.6</b>	<b>178.8</b>	
Source: UCLA Anderson, Dec 2005			
	<b>2006</b>	<b>2007</b>	
SF	134	132	
MF	57	56	
<b>TOTAL</b>	<b>191</b>	<b>188</b>	
Source: CIRB, June 29, 2006			
<b>AVERAGES</b>			
	<b>2006</b>		
<b>SF</b>	134.4		
<b>MF</b>	57.0		
<b>TOTAL</b>	<b>191.4</b>		
	<b>2007</b>		
<b>SF</b>	129.1		
<b>MF</b>	51.6		
<b>TOTAL</b>	<b>180.7</b>		

Table 17: Housing Permit Analysis

Year	Housing Permits
1970	195,692
1971	256,989
1972	279,670
1973	216,079
1974	129,229
1975	131,732
1976	221,940
1977	270,640
1978	243,805
1979	210,076
1980	144,987
1981	104,983
1982	84,373
1983	168,358
1984	218,007
1985	263,682
1986	302,934
1987	253,171
1988	255,559
1989	237,747
1990	164,313
1991	105,919
1992	97,407
1993	84,656
1994	97,047
1995	85,293
1996	94,283
1997	111,716
1998	125,707
1999	140,137
2000	148,540
2001	148,757
2002	167,761
2003	195,682
2004	212,960
2005	208,972
2006	191,533
2007	180,700
2008	180,000
Mean	177,719
STDEV	62,748
Mean + Stdev	240,467
Mean + 2 Stdev	303,216
Mean - Stdev	114,970
Mean - 2 Stdev	52,222

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 Figure 8: Graph of Housing Permit Analysis



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Table 18: 39-year Average Housing Calculations

County	% SF units from 3 year average (03 - 06) (% of total CA units)	% MF units from 3 year average (03 - 06) (% of total CA units)	Estimated total SF units 2007	Estimated total MF units 2007	Estimated total SF units re-pipes 2007	Estimated total MF units re-pipes 2007	Estimated total SF units 2007	Estimated total MF units 2007	Estimated County CPVC SF Units 2007	Estimated County CPVC MF Units 2007
Alameda	0.95%	1.42%	1690	2519	951	1417	2641	3936	792	1181
Alpine	0.01%	0.00%	19	0	11	0	30	0	9	0
Amador	0.18%	0.03%	313	56	176	32	489	88	147	26
Butte	0.73%	0.17%	1291	297	726	167	2017	465	605	139
Calaveras	0.38%	0.00%	678	8	381	4	1059	12	318	4
Colusa	0.07%	0.01%	129	26	73	15	202	41	61	12
Contra Costa	2.37%	0.66%	4212	1166	2370	656	6583	1822	1975	546
Del Norte	0.06%	0.02%	98	30	55	17	153	47	46	14
El Dorado	0.90%	0.05%	1592	96	896	54	2488	150	746	45
Fresno	2.61%	0.76%	4633	1359	2607	765	7240	2124	2172	637
Glenn	0.07%	0.01%	122	23	69	13	191	36	57	11
Humboldt	0.22%	0.03%	384	58	216	33	600	91	180	27
Imperial	0.81%	0.21%	1447	378	814	213	2261	590	678	177
Inyo	0.01%	0.00%	14	0	8	0	21	0	6	0
Kern	3.31%	0.41%	5887	736	3313	414	9200	1150	2760	345
Kings	0.42%	0.06%	752	110	423	62	1175	172	352	52
Lake	0.23%	0.04%	409	69	230	39	639	107	192	32
Lassen	0.09%	0.00%	159	4	89	2	248	7	74	2
Los Angeles	5.49%	6.48%	9749	11514	5486	6479	15235	17993	4570	5398
Madera	0.77%	0.09%	1360	156	766	88	2126	244	638	73
Marin	0.25%	0.11%	450	188	253	106	703	293	211	88
Mariposa	0.08%	0.00%	136	6	76	3	212	9	64	3
Mendocino	0.16%	0.04%	281	74	158	42	439	116	132	35
Merced	1.38%	0.08%	2453	148	1380	83	3833	232	1150	69
Modoc	0.01%	0.06%	21	104	12	58	32	162	10	49
Mono	0.06%	0.08%	113	137	64	77	177	214	53	64
Monterey	0.54%	0.10%	958	182	539	102	1497	285	449	85
Napa	0.29%	0.07%	514	130	289	73	804	203	241	61
Nevada	0.35%	0.58%	628	1022	353	575	981	1598	294	479
Orange	2.27%	1.47%	4034	2621	2270	1475	6303	4096	1891	1229
Placer	2.31%	0.12%	4107	211	2311	119	6417	331	1925	99
Plumas	0.13%	0.67%	227	1194	128	672	355	1867	106	560
Riverside	13.70%	1.92%	24346	3419	13699	1924	38046	5343	11414	1603
Sacramento	4.62%	1.00%	8206	1772	4617	997	12823	2769	3847	831
San Benito	0.05%	0.22%	85	397	48	223	133	620	40	186
San Bernardino	6.50%	2.21%	11543	3929	6495	2211	18039	6139	5412	1842
San Diego	4.36%	3.12%	7745	5548	4358	3122	12102	8670	3631	2601
San Francisco	0.03%	0.67%	55	1183	31	666	86	1849	26	555
San Joaquin	3.09%	0.17%	5489	303	3089	171	8578	474	2573	142
San Luis Obispo	0.89%	0.18%	1573	319	885	179	2458	498	737	149
San Mateo	0.29%	0.21%	517	380	291	214	807	593	242	178
Santa Barbara	0.47%	0.68%	831	1217	468	685	1299	1901	390	570
Santa Clara	1.23%	1.33%	2183	2363	1228	1329	3411	3692	1023	1108
Santa Cruz	0.33%	0.14%	593	247	334	139	927	385	278	116
Shasta	0.53%	0.07%	946	122	533	69	1479	191	444	57
Sierra	0.01%	0.03%	15	54	8	30	23	84	7	25
Siskiyou	0.12%	0.08%	206	144	116	81	322	225	97	67
Solano	1.09%	0.41%	1932	723	1087	407	3019	1130	906	339
Sonoma	0.71%	0.29%	1257	513	708	289	1965	802	590	241
Stanislaus	2.02%	0.13%	3591	239	2021	134	5611	373	1683	112
Sutter	0.55%	0.03%	975	59	549	33	1524	92	457	28
Tehama	0.27%	0.00%	482	7	271	4	753	11	226	3
Trinity	0.03%	0.07%	55	116	31	65	86	182	26	54
Tulare	1.19%	0.12%	2120	222	1193	125	3314	346	994	104
Tuolumne	0.18%	0.32%	317	562	179	316	496	878	149	263
Ventura	1.08%	0.41%	1915	727	1078	409	2993	1136	898	341
Yolo	0.68%	0.19%	1201	337	676	190	1876	527	563	158
Yuba	0.65%	0.00%	1154	0	649	0	1804	0	541	0
<b>TOTAL</b>	<b>72.13%</b>	<b>27.87%</b>	<b>128194</b>	<b>49525</b>	<b>72133</b>	<b>27867</b>	<b>200326</b>	<b>77392</b>	<b>60098</b>	<b>23218</b>
	100%		177719		100000		277719		83316	

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Table 19: 39-year Average VOC Calculations

County	County CPVC SF Units	County CPVC MF Units	SF + MF cement used (L/year)	SF + MF primer used (L/year)	cement VOC g/year	primer VOC g/year	Total VOC grams/year	Total VOC grams/working day	Total VOC pounds/year	Total VOC lbs/working day	Housing Units per working day
Alameda	792	1181	1,138	344	557507	189108	746615	2986	1646	6.58	7.89
Alpine	9	0	7	2	3534	1322	4,855.90	19.42	10.71	0.04	0.04
Amador	147	26	130	43	63641	23375	87,016.21	348.06	191.84	0.77	0.69
Butte	605	139	549	179	268813	98277	367,089.52	1468.36	809.29	3.24	2.98
Calaveras	318	4	259	86	126840	47397	174,237.18	696.95	384.13	1.54	1.29
Colusa	61	12	54	18	26567	9737	36,303.88	145.22	80.04	0.32	0.29
Contra Costa	1975	546	1,829	593	896261	326319	1,222,579.81	4890.32	2695.33	10.78	10.09
Del Norte	46	14	43	14	21119	7668	28,787.22	115.15	63.46	0.25	0.24
El Dorado	746	45	623	206	305465	113546	419,011.01	1676.04	923.76	3.70	3.17
Fresno	2172	637	2,027	657	993169	361079	1,354,248.39	5416.99	2985.61	11.94	11.24
Glenn	57	11	51	17	25004	9175	34,178.86	136.72	75.35	0.30	0.27
Humboldt	180	27	157	52	77114	28400	105,514.08	422.06	232.62	0.93	0.83
Imperial	678	177	624	203	305713	111460	417,172.53	1668.69	919.71	3.68	3.42
Inyo	6	0	5	2	2516	942	3,457.99	13.83	7.62	0.03	0.03
Kern	2760	345	2,380	783	1166424	430723	1,597,147.51	6388.59	3521.11	14.08	12.42
Kings	352	52	307	101	150537	55471	206,008.18	824.03	454.17	1.82	1.62
Lake	192	32	169	55	82771	30437	113,208.29	452.83	249.58	1.00	0.90
Lassen	74	2	61	20	29918	11160	41,078.24	164.31	90.56	0.36	0.31
Los Angeles	4570	5398	5,969	1828	2924899	1005283	3,930,182.51	15720.73	8664.57	34.66	39.87
Madera	638	73	547	180	268220	99146	367,365.41	1469.46	809.90	3.24	2.84
Marin	211	88	208	67	101787	36632	138,418.76	553.68	305.16	1.22	1.20
Mariposa	64	3	53	18	25855	9627	35,481.42	141.93	78.22	0.31	0.27
Mendocino	132	35	121	39	59473	21677	81,150.32	324.60	178.91	0.72	0.67
Merced	1150	69	961	318	470740	174981	645,720.79	2582.88	1423.57	5.69	4.88
Modoc	10	49	28	8	13877	4389	18,265.81	73.06	40.27	0.16	0.23
Mono	53	64	70	21	34338	11786	46,123.86	184.50	101.69	0.41	0.47
Monterey	449	85	400	131	195814	71855	267,668.24	1070.67	590.11	2.36	2.14
Napa	241	61	221	72	108227	39487	147,714.63	590.86	325.66	1.30	1.21
Nevada	294	479	440	132	215467	72709	288,175.97	1152.70	635.32	2.54	3.09
Orange	1891	1229	2,048	646	1003433	355159	1,358,592.52	5434.37	2995.18	11.98	12.48
Placer	1925	99	1,601	531	784498	291884	1,076,381.37	4305.53	2373.02	9.49	8.10
Plumas	106	560	321	90	157486	49684	207,169.50	828.68	456.73	1.83	2.67
Riverside	11414	1603	9,918	3258	4859975	1791911	6,651,885.46	26607.54	14664.90	58.66	52.07
Sacramento	3847	831	3,465	1130	1697779	621519	2,319,297.97	9277.19	5113.18	20.45	18.71
San Benito	40	186	110	31	54133	17184	71,316.81	285.27	157.23	0.63	0.90
San Bernardino	5412	1842	5,157	1664	2526915	915055	3,441,969.50	13767.88	7588.25	30.35	29.01
San Diego	3631	2601	4,033	1266	1976305	696517	2,672,821.73	10691.29	5892.56	23.57	24.93
San Francisco	26	555	254	68	124385	37386	161,771.11	647.08	356.64	1.43	2.32
San Joaquin	2573	142	2,144	710	1050675	390764	1,441,438.65	5765.75	3177.83	12.71	10.86
San Luis Obispo	737	149	660	216	323445	118553	441,997.74	1767.99	974.44	3.90	3.55
San Mateo	242	178	271	85	132726	46723	179,449.11	717.80	395.62	1.58	1.68
Santa Barbara	390	570	555	168	272061	92381	364,441.45	1457.77	803.46	3.21	3.84
Santa Clara	1023	1108	1,294	398	634123	218981	853,103.74	3412.41	1880.77	7.52	8.52
Santa Cruz	278	116	274	88	134195	48302	182,496.65	729.99	402.34	1.61	1.58
Shasta	444	57	383	126	187897	69356	257,253.14	1029.01	567.15	2.27	2.00
Sierra	7	25	16	5	7948	2560	10,507.67	42.03	23.17	0.09	0.13
Siskiyou	97	67	107	34	52271	18444	70,714.57	282.86	155.90	0.62	0.66
Solano	906	339	876	282	429164	154980	584,144.05	2336.58	1287.82	5.15	4.98
Sonoma	590	241	579	186	283477	102094	385,571.29	1542.29	850.04	3.40	3.32
Stanislaus	1683	112	1,411	467	691161	256752	947,913.23	3791.65	2089.79	8.36	7.18
Sutter	457	28	382	127	187197	69584	256,780.91	1027.12	566.11	2.26	1.94
Tehama	226	3	184	61	90323	33739	124,061.31	496.25	273.51	1.09	0.92
Trinity	26	54	44	13	21442	7123	28,565.86	114.26	62.98	0.25	0.32
Tulare	994	104	849	280	415925	153904	569,829.57	2279.32	1256.26	5.03	4.39
Tuolumne	149	263	231	69	113276	38035	151,311.41	605.25	333.58	1.33	1.65
Ventura	898	341	870	280	426528	153961	580,489.18	2321.96	1279.76	5.12	4.96
Yolo	563	158	522	169	255939	93153	349,091.84	1396.37	769.62	3.08	2.88
Yuba	541	0	438	146	214755	80351	295,106.12	1180.42	650.60	2.60	2.16
<b>TOTAL</b>	<b>60,098</b>	<b>23,218</b>	<b>58,431</b>	<b>18,780.37</b>	<b>28,631,046.84</b>	<b>10,329,204.52</b>	<b>38,960,251.35</b>	<b>155,841.01</b>	<b>85,892.67</b>	<b>343.57</b>	<b>333.26</b>

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 Table 20: 39-year Average VOC Comparisons

County	VOC Operational ToS (lbs/day)	Avg Project VOC lbs/day (365 day year)	Avg Project VOC lbs/working day (250 day year)	Avg Project tons/work day (250 day year)	Biogenic Sources tons/day	Geogenic Sources tons/day	Wildfires tons/day
Alameda	80	4.51	6.58	0.0033	11	0	0
Alpine	250	0.03	0.04	0.0000	9	0	0
Amador		0.53	0.77	0.0004	15	0	0
Butte	25	2.22	3.24	0.0016	41	0	3
Calaveras	550	1.05	1.54	0.0008	38	0	1
Colusa	25	0.22	0.32	0.0002	22	0	1
Contra Costa	80	7.38	10.78	0.0054	11	0	0
Del Norte	268	0.17	0.25	0.0001	24	0	3
El Dorado (Mountain)	82	2.53	3.70	0.0018	49	0	0
El Dorado (Lake Tahoe)					2	0	0
Fresno	55	8.18	11.94	0.0060	63	0	1
Glenn	137	0.21	0.30	0.0002	17	0	3
Humboldt	268	0.64	0.93	0.0005	81	0	5
Imperial	137	2.52	3.68	0.0018	3	0	0
Inyo	250	0.02	0.03	0.0000	7	0	0
Kern (San Joaquin)	137	9.65	14.08	0.0070	18	0	1
Kern (Mojave)	55				23	0	3
Kings	55	1.24	1.82	0.0009	4	0	0
Lake	150	0.68	1.00	0.0005	55	0	9
Lassen		0.25	0.36	0.0002	56	0	3
Los Angeles (South Coast)	137	23.74	34.66	0.0173	30	0	4
Los Angeles (Mojave)	55				6	0	0
Madera	55	2.22	3.24	0.0016	38	0	0
Marin	80	0.84	1.22	0.0006	7	0	0
Mariposa		0.21	0.31	0.0002	35	0	1
Mendocino	220	0.49	0.72	0.0004	117	0	0
Merced	55	3.90	5.69	0.0028	6	0	0
Modoc		0.11	0.16	0.0001	54	0	3
Mono	250	0.28	0.41	0.0002	21	0	0
Monterey	137	1.62	2.36	0.0012	50	0	1
Napa	80	0.89	1.30	0.0007	26	0	1
Nevada	25	1.74	2.54	0.0013	36	0	1

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Table 20: 39-year Average VOC Comparisons  
Continued

County	VOC Operational ToS (lbs/day)	Avg Project VOC lbs/day (365 day year)	Avg Project VOC lbs/working day (250 day year)	Avg Project tons/work day (250 day year)	Biogenic Sources tons/day	Geogenic Sources tons/day	Wildfires tons/day
Orange	55						
	75	8.21	11.98	0.0060	9	0	0
Placer (Sac Valley)	82	6.50	9.49	0.0047	7	0	0
Placer (Mountain)					26	0	2
Placer (Lake Tahoe)					1	0	0
Plumas	25	1.25	1.83	0.0009	43	0	8
Riverside (South Coast)	55	40.18	58.66	0.0293	22	0	2
Riverside (Salton Sea)					7	0	1
Riverside (Mojave)	137				0	0	0
Sacramento	65	14.01	20.45	0.0102	10	0	0
San Benito	137	0.43	0.63	0.0003	17	0	0
San Bernardino (South Co)	55	20.79	30.35	0.0152	15	0	4
San Bernardino (Mojave)	137				6	0	1
San Diego		16.14	23.57	0.0118	67	0	9
San Francisco	80	0.98	1.43	0.0007	1	0	0
San Joaquin	55	8.71	12.71	0.0064	8	0	0
San Luis Obispo	10	2.67	3.90	0.0019	32	0	4
San Mateo	80	1.08	1.58	0.0008	7	0	0
Santa Barbara	240	2.20	3.21	0.0016	35	19	0
Santa Clara	80	5.15	7.52	0.0038	29	0	0
Santa Cruz	137	1.10	1.61	0.0008	5	0	0
Shasta	25	1.55	2.27	0.0011	166	0	1
Sierra	25	0.06	0.09	0.0000	17	0	3
Siskiyou		0.43	0.62	0.0003	159	0	8
Solano (SF Bay)	80	3.53	5.15	0.0026	3	0	0
Solano (Sac Valley)	82				4	0	0
Sonoma (SF Bay)	80	2.33	3.40	0.0017	10	0	0
Sonoma (North Coast)					23	0	0
Stanislaus	55	5.73	8.36	0.0042	12	0	1
Sutter	25	1.55	2.26	0.0011	3	0	0
Tehama	25	0.75	1.09	0.0005	66	0	4
Trinity	268	0.17	0.25	0.0001	118	0	2
Tulare	55	3.44	5.03	0.0025	61	0	21
Tuolumne	1000	0.91	1.33	0.0007	46	0	8
Ventura	5/25/75	3.51	5.12	0.0026	26	4	3
Yolo	82	2.11	3.08	0.0015	15	0	0
Yuba	25	1.78	2.60	0.0013	15	0	0
<b>TOTAL</b>		235.32	343.57	0.1718			

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Table 21: Avg + 1 STDEV Housing Calculations

County	% SF units from 3 year average (03 - 06) (% of total CA units)	% MF units from 3 year average (03 - 06) (% of total CA units)	Estimated total SF units 2007	Estimated total MF units 2007	Estimated total SF units re-pipes 2007	Estimated total MF units re-pipes 2007	Estimated total SF units 2007	Estimated total MF units 2007	Estimated County CPVC SF Units 2007	Estimated County CPVC MF Units 2007
Alameda	0.95%	1.42%	2287	3408	951	1417	3238	4825	971	1448
Alpine	0.01%	0.00%	26	0	11	0	36	0	11	0
Amador	0.18%	0.03%	423	76	176	32	599	108	180	32
Butte	0.73%	0.17%	1746	402	726	167	2472	569	742	171
Calaveras	0.38%	0.00%	917	11	381	4	1298	15	389	4
Colusa	0.07%	0.01%	175	35	73	15	248	50	74	15
Contra Costa	2.37%	0.66%	5700	1577	2370	656	8070	2233	2421	670
Del Norte	0.06%	0.02%	132	41	55	17	187	58	56	17
El Dorado	0.90%	0.05%	2154	130	896	54	3050	184	915	55
Fresno	2.61%	0.76%	6269	1839	2607	765	8875	2604	2663	781
Glenn	0.07%	0.01%	165	32	69	13	234	45	70	13
Humboldt	0.22%	0.03%	520	79	216	33	736	112	221	34
Imperial	0.81%	0.21%	1958	511	814	213	2772	724	832	217
Inyo	0.01%	0.00%	18	0	8	0	26	0	8	0
Kern	3.31%	0.41%	7966	996	3313	414	11278	1410	3383	423
Kings	0.42%	0.06%	1017	149	423	62	1440	211	432	63
Lake	0.23%	0.04%	554	93	230	39	784	132	235	40
Lassen	0.09%	0.00%	215	6	89	2	304	8	91	2
Los Angeles	5.49%	6.48%	13191	15580	5486	6479	18677	22059	5603	6618
Madera	0.77%	0.09%	1841	211	766	88	2606	299	782	90
Marin	0.25%	0.11%	609	254	253	106	862	359	258	108
Mariposa	0.08%	0.00%	184	8	76	3	260	12	78	3
Mendocino	0.16%	0.04%	380	100	158	42	539	142	162	43
Merced	1.38%	0.08%	3319	201	1380	83	4700	284	1410	85
Modoc	0.01%	0.06%	28	141	12	58	40	199	12	60
Mono	0.06%	0.08%	153	186	64	77	217	263	65	79
Monterey	0.54%	0.10%	1296	246	539	102	1835	349	551	105
Napa	0.29%	0.07%	696	176	289	73	985	249	296	75
Nevada	0.35%	0.58%	850	1383	353	575	1203	1959	361	588
Orange	2.27%	1.47%	5458	3547	2270	1475	7728	5021	2318	1506
Placer	2.31%	0.12%	5556	286	2311	119	7867	405	2360	122
Plumas	0.13%	0.67%	307	1616	128	672	435	2288	130	686
Riverside	13.70%	1.92%	32942	4626	13699	1924	46642	6550	13993	1965
Sacramento	4.62%	1.00%	11103	2397	4617	997	15720	3394	4716	1018
San Benito	0.05%	0.22%	115	537	48	223	163	760	49	228
San Bernardino	6.50%	2.21%	15619	5316	6495	2211	22114	7526	6634	2258
San Diego	4.36%	3.12%	10479	7507	4358	3122	14837	10629	4451	3189
San Francisco	0.03%	0.67%	74	1601	31	666	105	2267	32	680
San Joaquin	3.09%	0.17%	7428	410	3089	171	10516	581	3155	174
San Luis Obispo	0.89%	0.18%	2129	431	885	179	3014	610	904	183
San Mateo	0.29%	0.21%	699	514	291	214	990	727	297	218
Santa Barbara	0.47%	0.68%	1125	1646	468	685	1593	2331	478	699
Santa Clara	1.23%	1.33%	2954	3197	1228	1329	4182	4526	1255	1358
Santa Cruz	0.33%	0.14%	803	334	334	139	1137	472	341	142
Shasta	0.53%	0.07%	1281	165	533	69	1813	234	544	70
Sierra	0.01%	0.03%	20	72	8	30	29	103	9	31
Siskiyou	0.12%	0.08%	279	195	116	81	395	276	119	83
Solano	1.09%	0.41%	2614	978	1087	407	3701	1385	1110	415
Sonoma	0.71%	0.29%	1701	694	708	289	2409	983	723	295
Stanislaus	2.02%	0.13%	4859	323	2021	134	6879	457	2064	137
Sutter	0.55%	0.03%	1320	80	549	33	1869	113	561	34
Tehama	0.27%	0.00%	652	10	271	4	923	14	277	4
Trinity	0.03%	0.07%	74	157	31	65	105	223	32	67
Tulare	1.19%	0.12%	2869	300	1193	125	4062	424	1219	127
Tuolumne	0.18%	0.32%	429	760	179	316	608	1077	182	323
Ventura	1.08%	0.41%	2592	984	1078	409	3669	1393	1101	418
Yolo	0.68%	0.19%	1625	456	676	190	2300	646	690	194
Yuba	0.65%	0.00%	1562	0	649	0	2211	0	663	0
<b>TOTAL</b>	<b>72.13%</b>	<b>27.87%</b>	<b>173455</b>	<b>67011</b>	<b>72133</b>	<b>27867</b>	<b>245588</b>	<b>94878</b>	<b>73676</b>	<b>28464</b>
	100%		240467		100000		340466		102140	

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Table 22: Average +1 STDEV VOC Calculations

County	County CPVC SF Units	County CPVC MF Units	SF + MF cement used (L/year)	SF + MF primer used (L/year)	cement VOC g/year	primer VOC g/year	Total VOC grams/year	Total VOC grams/working day	Total VOC pounds/year	Total VOC lbs/working day	Housing Units per working day
Alameda	971	1448	1,395	422	683471	231836	915306	3661	2018	8.07	9.68
Alpine	11	0	9	3	4332	1621	5,953.04	23.81	13.12	0.05	0.04
Amador	180	32	159	52	78020	28656	106,676.71	426.71	235.18	0.94	0.85
Butte	742	171	673	219	329548	120482	450,029.95	1800.12	992.15	3.97	3.65
Calaveras	389	4	317	106	155498	58106	213,604.44	854.42	470.92	1.88	1.58
Colusa	74	15	66	22	32569	11937	44,506.40	178.03	98.12	0.39	0.36
Contra Costa	2421	670	2,242	727	1098763	400048	1,498,810.23	5995.24	3304.31	13.22	12.36
Del Norte	56	17	53	17	25891	9401	35,291.42	141.17	77.80	0.31	0.29
El Dorado	915	55	764	253	374482	139201	513,682.61	2054.73	1132.48	4.53	3.88
Fresno	2663	781	2,485	805	1217567	442662	1,660,228.10	6640.91	3660.18	14.64	13.78
Glenn	70	13	63	20	30653	11248	41,901.25	167.61	92.38	0.37	0.33
Humboldt	221	34	193	63	94537	34817	129,353.99	517.42	285.18	1.14	1.02
Imperial	832	217	765	248	374786	136643	511,428.75	2045.71	1127.51	4.51	4.20
Inyo	8	0	6	2	3085	1154	4,239.29	16.96	9.35	0.04	0.03
Kern	3383	423	2,918	960	1429967	528041	1,958,007.99	7832.03	4316.67	17.27	15.23
Kings	432	63	377	124	184550	68004	252,553.79	1010.22	556.79	2.23	1.98
Lake	235	40	207	68	101473	37314	138,786.64	555.15	305.97	1.22	1.10
Lassen	91	2	75	25	36678	13682	50,359.48	201.44	111.02	0.44	0.37
Los Angeles	5603	6618	7,318	2241	3585753	1232417	4,818,170.34	19272.68	10622.25	42.49	48.88
Madera	782	90	671	221	328821	121547	450,368.18	1801.47	992.89	3.97	3.49
Marin	258	108	255	82	124784	44909	169,693.17	678.77	374.11	1.50	1.47
Mariposa	78	3	65	21	31696	11802	43,498.12	173.99	95.90	0.38	0.33
Mendocino	162	43	149	48	72910	26575	99,485.47	397.94	219.33	0.88	0.82
Merced	1410	85	1,178	390	577099	214516	791,615.34	3166.46	1745.21	6.98	5.98
Modoc	12	60	35	10	17013	5380	22,392.80	89.57	49.37	0.20	0.29
Mono	65	79	86	26	42096	14449	56,545.11	226.18	124.66	0.50	0.58
Monterey	551	105	490	160	240056	88090	328,145.37	1312.58	723.44	2.89	2.62
Napa	296	75	271	88	132680	48409	181,089.36	724.36	399.23	1.60	1.48
Nevada	361	588	539	162	264150	89136	353,286.62	1413.15	778.86	3.12	3.79
Orange	2318	1506	2,511	792	1230150	435404	1,665,553.74	6662.21	3671.92	14.69	15.30
Placer	2360	122	1,963	651	961748	357832	1,319,579.63	5278.32	2909.18	11.64	9.93
Plumas	130	686	394	111	193068	60909	253,977.51	1015.91	559.92	2.24	3.27
Riverside	13993	1965	12,159	3994	5958041	2196776	8,154,816.51	32619.27	17978.30	71.91	63.83
Sacramento	4716	1018	4,248	1385	2081376	761945	2,843,321.56	11373.29	6268.45	25.07	22.94
San Benito	49	228	135	38	66363	21067	87,430.17	349.72	192.75	0.77	1.11
San Bernardino	6634	2258	6,322	2040	3097847	1121803	4,219,650.19	16878.60	9302.74	37.21	35.57
San Diego	4451	3189	4,945	1553	2422832	853889	3,276,720.70	13106.88	7223.93	28.90	30.56
San Francisco	32	680	311	83	152489	45833	198,321.77	793.29	437.22	1.75	2.85
San Joaquin	3155	174	2,629	871	1288065	479053	1,767,118.18	7068.47	3895.83	15.58	13.32
San Luis Obispo	904	183	809	264	396524	145339	541,862.98	2167.45	1194.60	4.78	4.35
San Mateo	297	218	332	104	162714	57280	219,993.95	879.98	485.00	1.94	2.06
Santa Barbara	478	699	681	206	333530	113253	446,783.58	1787.13	984.99	3.94	4.71
Santa Clara	1255	1358	1,587	488	777397	268457	1,045,854.52	4183.42	2305.71	9.22	10.45
Santa Cruz	341	142	336	108	164515	59215	223,730.05	894.92	493.24	1.97	1.93
Shasta	544	70	470	155	230351	85026	315,377.07	1261.51	695.29	2.78	2.46
Sierra	9	31	20	6	9744	3138	12,881.79	51.53	28.40	0.11	0.16
Siskiyou	119	83	131	41	64081	22611	86,691.87	346.77	191.12	0.76	0.81
Solano	1110	415	1,074	345	526129	189997	716,125.92	2864.50	1578.79	6.32	6.10
Sonoma	723	295	709	228	347526	125161	472,687.50	1890.75	1042.10	4.17	4.07
Stanislaus	2064	137	1,729	572	847322	314763	1,162,085.33	4648.34	2561.96	10.25	8.80
Sutter	561	34	468	155	229493	85305	314,798.14	1259.19	694.01	2.78	2.38
Tehama	277	4	226	75	110730	41361	152,091.79	608.37	335.31	1.34	1.12
Trinity	32	67	54	16	26287	8733	35,020.05	140.08	77.21	0.31	0.39
Tulare	1219	127	1,041	343	509900	188678	698,577.21	2794.31	1540.10	6.16	5.38
Tuolumne	182	323	283	85	138870	46629	185,498.81	742.00	408.95	1.64	2.02
Ventura	1101	418	1,067	343	522899	188747	711,645.26	2846.58	1568.91	6.28	6.07
Yolo	690	194	640	208	313766	114200	427,965.87	1711.86	943.50	3.77	3.54
Yuba	663	0	537	179	263277	98505	361,782.57	1447.13	797.59	3.19	2.65
<b>TOTAL</b>	<b>73,676</b>	<b>28,464</b>	<b>71,633</b>	<b>23,023.62</b>	<b>35,099,963.00</b>	<b>12,662,991.28</b>	<b>47,762,954.27</b>	<b>191,051.82</b>	<b>105,299.31</b>	<b>421.20</b>	<b>408.56</b>

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 Table 23: Average +1 STDEV VOC Comparisons

County	VOC Operational ToS (lbs/day)	+1 Stdev Project VOC lbs/day (365 day year)	+1Stdev Project VOC lbs/working day (250 day year)	+1 Stdev Project tons/work day (250 day year)	Biogenic Sources tons/day	Geogenic Sources tons/day	Wildfires tons/day
Alameda	80	5.53	8.07	0.0040	11	0	0
Alpine	250	0.04	0.05	0.0000	9	0	0
Amador		0.64	0.94	0.0005	15	0	0
Butte	25	2.72	3.97	0.0020	41	0	3
Calaveras	550	1.29	1.88	0.0009	38	0	1
Colusa	25	0.27	0.39	0.0002	22	0	1
Contra Costa	80	9.05	13.22	0.0066	11	0	0
Del Norte	268	0.21	0.31	0.0002	24	0	3
El Dorado (Mountain)	82	3.10	4.53	0.0023	49	0	0
El Dorado (Lake Tahoe)					2	0	0
Fresno	55	10.03	14.64	0.0073	63	0	1
Glenn	137	0.25	0.37	0.0002	17	0	3
Humboldt	268	0.78	1.14	0.0006	81	0	5
Imperial	137	3.09	4.51	0.0023	3	0	0
Inyo	250	0.03	0.04	0.0000	7	0	0
Kern (San Joaquin)	137	11.83	17.27	0.0086	18	0	1
Kern (Mojave)	55				23	0	3
Kings	55	1.53	2.23	0.0011	4	0	0
Lake	150	0.84	1.22	0.0006	55	0	9
Lassen		0.30	0.44	0.0002	56	0	3
Los Angeles (South Coast)	137	29.10	42.49	0.0212	30	0	4
Los Angeles (Mojave)	55				6	0	0
Madera	55	2.72	3.97	0.0020	38	0	0
Marin	80	1.02	1.50	0.0007	7	0	0
Mariposa		0.26	0.38	0.0002	35	0	1
Mendocino	220	0.60	0.88	0.0004	117	0	0
Merced	55	4.78	6.98	0.0035	6	0	0
Modoc		0.14	0.20	0.0001	54	0	3
Mono	250	0.34	0.50	0.0002	21	0	0
Monterey	137	1.98	2.89	0.0014	50	0	1
Napa	80	1.09	1.60	0.0008	26	0	1
Nevada	25	2.13	3.12	0.0016	36	0	1

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 Table 23: Average +1 STDEV VOC Comparisons  
 Continued

County	VOC Operational ToS (lbs/day)	+1 Stdev Project VOC lbs/day (365 day year)	+1Stdev Project VOC lbs/working day (250 day year)	+1 Stdev Project tons/work day (250 day year)	Biogenic Sources tons/day	Geogenic Sources tons/day	Wildfires tons/day
Orange	55						
	75	10.06	14.69	0.0073	9	0	0
Placer (Sac Valley)	82	7.97	11.64	0.0058	7	0	0
Placer (Mountain)					26	0	2
Placer (Lake Tahoe)					1	0	0
Plumas	25	1.53	2.24	0.0011	43	0	8
Riverside (South Coast)	55	49.26	71.91	0.0360	22	0	2
Riverside (Salton Sea)					7	0	1
Riverside (Mojave)	137				0	0	0
Sacramento	65	17.17	25.07	0.0125	10	0	0
San Benito	137	0.53	0.77	0.0004	17	0	0
San Bernardino (South Co)	55	25.49	37.21	0.0186	15	0	4
San Bernardino (Mojave)	137				6	0	1
San Diego		19.79	28.90	0.0144	67	0	9
San Francisco	80	1.20	1.75	0.0009	1	0	0
San Joaquin	55	10.67	15.58	0.0078	8	0	0
San Luis Obispo	10	3.27	4.78	0.0024	32	0	4
San Mateo	80	1.33	1.94	0.0010	7	0	0
Santa Barbara	240	2.70	3.94	0.0020	35	19	0
Santa Clara	80	6.32	9.22	0.0046	29	0	0
Santa Cruz	137	1.35	1.97	0.0010	5	0	0
Shasta	25	1.90	2.78	0.0014	166	0	1
Sierra	25	0.08	0.11	0.0001	17	0	3
Siskiyou		0.52	0.76	0.0004	159	0	8
Solano (SF Bay)	80	4.33	6.32	0.0032	3	0	0
Solano (Sac Valley)	82				4	0	0
Sonoma (SF Bay)	80	2.86	4.17	0.0021	10	0	0
Sonoma (North Coast)					23	0	0
Stanislaus	55	7.02	10.25	0.0051	12	0	1
Sutter	25	1.90	2.78	0.0014	3	0	0
Tehama	25	0.92	1.34	0.0007	66	0	4
Trinity	268	0.21	0.31	0.0002	118	0	2
Tulare	55	4.22	6.16	0.0031	61	0	21
Tuolumne	1000	1.12	1.64	0.0008	46	0	8
Ventura	5/25/75	4.30	6.28	0.0031	26	4	3
Yolo	82	2.58	3.77	0.0019	15	0	0
Yuba	25	2.19	3.19	0.0016	15	0	0
<b>TOTAL</b>		288.49	421.20	0.2106			

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Table 24: Average +2STDEV Housing Calculations

County	% SF units from 3 year average (03 - 06) (% of total CA units)	% MF units from 3 year average (03 - 06) (% of total CA units)	Estimated total SF units +2 Stdev	Estimated total MF units +2 Stdev	Estimated total SF units re-pipes +2 Stdev	Estimated total MF units re-pipes +2 Stdev	Estimated total SF units +2 Stdev	Estimated total MF units +2 Stdev	Estimated County CPVC SF Units +2 Stdev	Estimated County CPVC MF Units +2 Stdev
Alameda	0.95%	1.42%	2884	4297	951	1417	3835	5715	1150	1714
Alpine	0.01%	0.00%	32	0	11	0	43	0	13	0
Amador	0.18%	0.03%	534	96	176	32	710	128	213	38
Butte	0.73%	0.17%	2202	507	726	167	2928	674	878	202
Calaveras	0.38%	0.00%	1156	13	381	4	1537	18	461	5
Colusa	0.07%	0.01%	220	45	73	15	293	59	88	18
Contra Costa	2.37%	0.66%	7187	1989	2370	656	9557	2645	2867	793
Del Norte	0.06%	0.02%	167	52	55	17	222	69	67	21
El Dorado	0.90%	0.05%	2716	164	896	54	3612	218	1083	65
Fresno	2.61%	0.76%	7904	2319	2607	765	10511	3084	3153	925
Glenn	0.07%	0.01%	209	40	69	13	277	53	83	16
Humboldt	0.22%	0.03%	655	100	216	33	872	133	261	40
Imperial	0.81%	0.21%	2469	645	814	213	3283	857	985	257
Inyo	0.01%	0.00%	23	0	8	0	31	0	9	0
Kern	3.31%	0.41%	10044	1256	3313	414	13357	1670	4007	501
Kings	0.42%	0.06%	1283	188	423	62	1706	250	512	75
Lake	0.23%	0.04%	698	117	230	39	928	156	279	47
Lassen	0.09%	0.00%	271	7	89	2	360	10	108	3
Los Angeles	5.49%	6.48%	16633	19645	5486	6479	22119	26124	6636	7837
Madera	0.77%	0.09%	2321	267	766	88	3087	355	926	106
Marin	0.25%	0.11%	767	320	253	106	1020	426	306	128
Mariposa	0.08%	0.00%	232	10	76	3	308	14	92	4
Mendocino	0.16%	0.04%	480	127	158	42	638	168	191	51
Merced	1.38%	0.08%	4185	253	1380	83	5566	336	1670	101
Modoc	0.01%	0.06%	35	177	12	58	47	236	14	71
Mono	0.06%	0.08%	193	234	64	77	257	311	77	93
Monterey	0.54%	0.10%	1634	311	539	102	2173	413	652	124
Napa	0.29%	0.07%	877	222	289	73	1167	295	350	89
Nevada	0.35%	0.58%	1071	1744	353	575	1425	2320	427	696
Orange	2.27%	1.47%	6882	4472	2270	1475	9152	5947	2746	1784
Placer	2.31%	0.12%	7006	361	2311	119	9317	480	2795	144
Plumas	0.13%	0.67%	387	2038	128	672	515	2710	155	813
Riverside	13.70%	1.92%	41539	5833	13699	1924	55238	7757	16571	2327
Sacramento	4.62%	1.00%	14000	3023	4617	997	18618	4020	5585	1206
San Benito	0.05%	0.22%	145	677	48	223	193	900	58	270
San Bernardino	6.50%	2.21%	19695	6703	6495	2211	26190	8914	7857	2674
San Diego	4.36%	3.12%	13213	9466	4358	3122	17571	12588	5271	3776
San Francisco	0.03%	0.67%	94	2019	31	666	125	2685	37	805
San Joaquin	3.09%	0.17%	9366	517	3089	171	12455	688	3736	206
San Luis Obispo	0.89%	0.18%	2684	543	885	179	3569	723	1071	217
San Mateo	0.29%	0.21%	881	648	291	214	1172	861	352	258
Santa Barbara	0.47%	0.68%	1418	2076	468	685	1886	2760	566	828
Santa Clara	1.23%	1.33%	3724	4031	1228	1329	4953	5361	1486	1608
Santa Cruz	0.33%	0.14%	1012	421	334	139	1346	560	404	168
Shasta	0.53%	0.07%	1615	209	533	69	2147	277	644	83
Sierra	0.01%	0.03%	26	91	8	30	34	121	10	36
Siskiyou	0.12%	0.08%	352	245	116	81	468	326	140	98
Solano	1.09%	0.41%	3296	1233	1087	407	4383	1640	1315	492
Sonoma	0.71%	0.29%	2145	875	708	289	2853	1164	856	349
Stanislaus	2.02%	0.13%	6127	407	2021	134	8147	541	2444	162
Sutter	0.55%	0.03%	1664	101	549	33	2213	134	664	40
Tehama	0.27%	0.00%	822	12	271	4	1093	16	328	5
Trinity	0.03%	0.07%	94	198	31	65	125	264	37	79
Tulare	1.19%	0.12%	3618	378	1193	125	4811	503	1443	151
Tuolumne	0.18%	0.32%	542	959	179	316	720	1275	216	383
Ventura	1.08%	0.41%	3268	1241	1078	409	4345	1650	1304	495
Yolo	0.68%	0.19%	2049	575	676	190	2724	765	817	229
Yuba	0.65%	0.00%	1969	0	649	0	2619	0	786	0
<b>TOTAL</b>	<b>72.13%</b>	<b>27.87%</b>	<b>218718</b>	<b>84498</b>	<b>72133</b>	<b>27867</b>	<b>290851</b>	<b>112365</b>	<b>87255</b>	<b>33709</b>
	100%		303216		100000		403215		120965	

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Table 25: Average +2 STDEV VOC Calculations

County	County CPVC SF Units	County CPVC MF Units	SF + MF cement used (L/year)	SF + MF primer used (L/year)	cement VOC g/year	primer VOC g/year	Total VOC grams/year	Total VOC grams/working day	Total VOC pounds/year	Total VOC lbs/working day	Housing Units per working day
Alameda	1150	1714	1,652	499	809436	274563	1084000	4336	2390	9.56	11.46
Alpine	13	0	10	3	5131	1920	7,050.20	28.20	15.54	0.06	0.05
Amador	213	38	189	62	92400	33938	126,337.51	505.35	278.53	1.11	1.01
Butte	878	202	797	259	390285	142687	532,971.70	2131.89	1175.00	4.70	4.32
Calaveras	461	5	376	125	184157	68815	252,972.32	1011.89	557.71	2.23	1.87
Colusa	88	18	79	26	38572	14137	52,709.05	210.84	116.20	0.46	0.42
Contra Costa	2867	793	2,656	861	1301268	473777	1,775,045.06	7100.18	3913.31	15.65	14.64
Del Norte	67	21	63	20	30663	11133	41,795.73	167.18	92.14	0.37	0.35
El Dorado	1083	65	905	300	443500	164856	608,355.72	2433.42	1341.20	5.36	4.60
Fresno	3153	925	2,943	953	1441967	524245	1,966,212.68	7864.85	4334.76	17.34	16.31
Glenn	83	16	74	24	36303	13321	49,623.77	198.50	109.40	0.44	0.40
Humboldt	261	40	228	75	111960	41234	153,194.29	612.78	337.74	1.35	1.20
Imperial	985	257	906	294	443860	161827	605,686.46	2422.75	1335.31	5.34	4.97
Inyo	9	0	7	2	3654	1367	5,020.60	20.08	11.07	0.04	0.04
Kern	4007	501	3,456	1137	1693513	625361	2,318,874.22	9275.50	5112.24	20.45	18.03
Kings	512	75	446	146	218563	80537	299,100.15	1196.40	659.40	2.64	2.35
Lake	279	47	245	80	120175	44191	164,365.39	657.46	362.36	1.45	1.30
Lassen	108	3	89	29	43437	16204	59,640.87	238.56	131.49	0.53	0.44
Los Angeles	6636	7837	8,667	2654	4246617	1459555	5,706,172.32	22824.69	12579.96	50.32	57.89
Madera	926	106	795	262	389424	143948	533,372.27	2133.49	1175.88	4.70	4.13
Marin	306	128	302	97	147782	53186	200,968.09	803.87	443.06	1.77	1.74
Mariposa	92	4	77	25	37538	13977	51,514.94	206.06	113.57	0.45	0.39
Mendocino	191	51	176	57	86348	31473	117,820.92	471.28	259.75	1.04	0.97
Merced	1670	101	1,395	462	683460	254052	937,512.21	3750.05	2066.86	8.27	7.08
Modoc	14	71	41	12	20148	6372	26,519.86	106.08	58.47	0.23	0.34
Mono	77	93	102	31	49855	17112	66,966.53	267.87	147.64	0.59	0.68
Monterey	652	124	580	190	284299	104325	388,623.46	1554.49	856.77	3.43	3.10
Napa	350	89	321	104	157134	57331	214,464.63	857.86	472.81	1.89	1.75
Nevada	427	696	638	192	312834	105565	418,398.31	1673.59	922.41	3.69	4.49
Orange	2746	1784	2,973	938	1456870	515650	1,972,519.86	7890.08	4348.66	17.39	18.12
Placer	2795	144	2,324	771	1139000	423781	1,562,781.77	6251.13	3445.34	13.78	11.76
Plumas	155	813	467	131	228651	72135	300,786.26	1203.15	663.12	2.65	3.87
Riverside	16571	2327	14,400	4730	7056124	2601648	9,657,771.52	38631.09	21291.75	85.17	75.59
Sacramento	5585	1206	5,031	1641	2464980	902374	3,367,353.51	13469.41	7423.74	29.69	27.16
San Benito	58	270	160	45	78594	24950	103,543.79	414.18	228.28	0.91	1.31
San Bernardino	7857	2674	7,487	2416	3668789	1328554	4,997,343.27	19989.37	11017.26	44.07	42.12
San Diego	5271	3776	5,856	1839	2869367	1011263	3,880,629.30	15522.52	8555.32	34.22	36.19
San Francisco	37	805	369	99	180593	54280	234,873.01	939.49	517.81	2.07	3.37
San Joaquin	3736	206	3,113	1032	1525459	567344	2,092,802.89	8371.21	4613.84	18.46	15.77
San Luis Obispo	1071	217	958	313	469605	172125	641,729.81	2566.92	1414.77	5.66	5.15
San Mateo	352	258	393	123	192702	67837	260,539.44	1042.16	574.39	2.30	2.44
Santa Barbara	566	828	806	244	395001	134126	529,127.01	2116.51	1166.53	4.67	5.58
Santa Clara	1486	1608	1,879	578	920674	317935	1,238,608.37	4954.43	2730.66	10.92	12.38
Santa Cruz	404	168	398	128	194836	70128	264,964.12	1059.86	584.15	2.34	2.29
Shasta	644	83	557	183	272805	100697	373,501.92	1494.01	823.43	3.29	2.91
Sierra	10	36	24	7	11540	3716	15,255.93	61.02	33.63	0.13	0.19
Siskiyou	140	98	155	49	75891	26779	102,669.42	410.68	226.35	0.91	0.95
Solano	1315	492	1,272	409	623096	225013	848,109.88	3392.44	1869.76	7.48	7.23
Sonoma	856	349	840	270	411576	148229	559,805.10	2239.22	1234.16	4.94	4.82
Stanislaus	2444	162	2,048	678	1003486	372775	1,376,260.83	5505.04	3034.14	12.14	10.43
Sutter	664	40	555	184	271789	101027	372,816.30	1491.27	821.92	3.29	2.82
Tehama	328	5	268	89	131138	48985	180,122.73	720.49	397.10	1.59	1.33
Trinity	37	79	64	19	31132	10342	41,474.35	165.90	91.44	0.37	0.47
Tulare	1443	151	1,232	406	603875	223451	827,326.90	3309.31	1823.94	7.30	6.38
Tuolumne	216	383	336	100	164464	55223	219,686.75	878.75	484.33	1.94	2.39
Ventura	1304	495	1,264	406	619270	223533	842,803.43	3371.21	1858.06	7.43	7.19
Yolo	817	229	758	246	371594	135247	506,841.15	2027.36	1117.39	4.47	4.19
Yuba	786	0	636	212	311800	116660	428,460.09	1713.84	944.59	3.78	3.14
<b>TOTAL</b>	<b>87,255</b>	<b>33,709</b>	<b>84,835</b>	<b>27,266.94</b>	<b>41,568,982.25</b>	<b>14,996,815.23</b>	<b>56,565,797.48</b>	<b>226,263.19</b>	<b>124,706.26</b>	<b>498.83</b>	<b>483.86</b>

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 Table 26: Average +2 STDEV VOC Comparisons

County	VOC Operational ToS (lbs/day)	+2 Stdev Project VOC lbs/day (365 day year)	+2 Stdev Project VOC lbs/working day (250 day year)	+2 Stdev Project tons/work day (250 day year)	Biogenic Sources tons/day	Geogenic Sources tons/day	Wildfires tons/day
Alameda	80	6.55	9.56	0.0048	11	0	0
Alpine	250	0.04	0.06	0.0000	9	0	0
Amador		0.76	1.11	0.0006	15	0	0
Butte	25	3.22	4.70	0.0024	41	0	3
Calaveras	550	1.53	2.23	0.0011	38	0	1
Colusa	25	0.32	0.46	0.0002	22	0	1
Contra Costa	80	10.72	15.65	0.0078	11	0	0
Del Norte	268	0.25	0.37	0.0002	24	0	3
El Dorado (Mountain)	82	3.67	5.36	0.0027	49	0	0
El Dorado (Lake Tahoe)					2	0	0
Fresno	55	11.88	17.34	0.0087	63	0	1
Glenn	137	0.30	0.44	0.0002	17	0	3
Humboldt	268	0.93	1.35	0.0007	81	0	5
Imperial	137	3.66	5.34	0.0027	3	0	0
Inyo	250	0.03	0.04	0.0000	7	0	0
Kern (San Joaquin)	137	14.01	20.45	0.0102	18	0	1
Kern (Mojave)	55				23	0	3
Kings	55	1.81	2.64	0.0013	4	0	0
Lake	150	0.99	1.45	0.0007	55	0	9
Lassen		0.36	0.53	0.0003	56	0	3
Los Angeles (South Coast)	137	34.47	50.32	0.0252	30	0	4
Los Angeles (Mojave)	55				6	0	0
Madera	55	3.22	4.70	0.0024	38	0	0
Marin	80	1.21	1.77	0.0009	7	0	0
Mariposa		0.31	0.45	0.0002	35	0	1
Mendocino	220	0.71	1.04	0.0005	117	0	0
Merced	55	5.66	8.27	0.0041	6	0	0
Modoc		0.16	0.23	0.0001	54	0	3
Mono	250	0.40	0.59	0.0003	21	0	0
Monterey	137	2.35	3.43	0.0017	50	0	1
Napa	80	1.30	1.89	0.0009	26	0	1
Nevada	25	2.53	3.69	0.0018	36	0	1

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 Table 26: Average +2 STDEV VOC Comparisons  
 Continued

County	VOC Operational ToS (lbs/day)	+2 Stdev Project VOC lbs/day (365 day year)	+2 Stdev Project VOC lbs/working day (250 day year)	+2 Stdev Project tons/work day (250 day year)	Biogenic Sources tons/day	Geogenic Sources tons/day	Wildfires tons/day
Orange	55						
	75	11.91	17.39	0.0087	9	0	0
Placer (Sac Valley)	82	9.44	13.78	0.0069	7	0	0
Placer (Mountain)					26	0	2
Placer (Lake Tahoe)					1	0	0
Plumas	25	1.82	2.65	0.0013	43	0	8
Riverside (South Coast)	55	58.33	85.17	0.0426	22	0	2
Riverside (Salton Sea)					7	0	1
Riverside (Mojave)	137				0	0	0
Sacramento	65	20.34	29.69	0.0148	10	0	0
San Benito	137	0.63	0.91	0.0005	17	0	0
San Bernardino (South Co)	55	30.18	44.07	0.0220	15	0	4
San Bernardino (Mojave)	137				6	0	1
San Diego		23.44	34.22	0.0171	67	0	9
San Francisco	80	1.42	2.07	0.0010	1	0	0
San Joaquin	55	12.64	18.46	0.0092	8	0	0
San Luis Obispo	10	3.88	5.66	0.0028	32	0	4
San Mateo	80	1.57	2.30	0.0011	7	0	0
Santa Barbara	240	3.20	4.67	0.0023	35	19	0
Santa Clara	80	7.48	10.92	0.0055	29	0	0
Santa Cruz	137	1.60	2.34	0.0012	5	0	0
Shasta	25	2.26	3.29	0.0016	166	0	1
Sierra	25	0.09	0.13	0.0001	17	0	3
Siskiyou		0.62	0.91	0.0005	159	0	8
Solano (SF Bay)	80	5.12	7.48	0.0037	3	0	0
Solano (Sac Valley)	82				4	0	0
Sonoma (SF Bay)	80	3.38	4.94	0.0025	10	0	0
Sonoma (North Coast)					23	0	0
Stanislaus	55	8.31	12.14	0.0061	12	0	1
Sutter	25	2.25	3.29	0.0016	3	0	0
Tehama	25	1.09	1.59	0.0008	66	0	4
Trinity	268	0.25	0.37	0.0002	118	0	2
Tulare	55	5.00	7.30	0.0036	61	0	21
Tuolumne	1000	1.33	1.94	0.0010	46	0	8
Ventura	5/25/75	5.09	7.43	0.0037	26	4	3
Yolo	82	3.06	4.47	0.0022	15	0	0
Yuba	25	2.59	3.78	0.0019	15	0	0
<b>TOTAL</b>		341.66	498.83	0.2494			

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 Table 27: Housing Projection VOC Comparisons

County	VOC Operational ToS (lbs/day)	2007 Project VOC lbs/day (365 day year)	2007 Project VOC lbs/working day (250 day year)	Avg Project VOC lbs/day (365 day year)	Avg Project VOC lbs/working day (250 day year)	+ 1 STDEV Project VOC lbs/day (365 day year)	+1 STDEV Project VOC lbs/working day (250 day year)	+ 2 STDEV Project VOC lbs/day (365 day year)	+2 STDEV Project VOC lbs/working day (250 day year)
Alameda	80	5	7	5	7	6	8	7	10
Alpine	250	0	0	0	0	0	0	0	0
Amador		1	1	1	1	1	1	1	1
Butte	25	2	3	2	3	3	4	3	5
Calaveras	550	1	2	1	2	1	2	2	2
Colusa	25	0	0	0	0	0	0	0	0
Contra Costa	80	7	11	7	11	9	13	11	16
Del Norte	268	0	0	0	0	0	0	0	0
El Dorado (Mountain)	82	3	4	3	4	3	5	4	5
El Dorado (Lake Tahoe)									
Fresno	55	8	12	8	12	10	15	12	17
Glenn	137	0	0	0	0	0	0	0	0
Humboldt	268	1	1	1	1	1	1	1	1
Imperial	137	3	4	3	4	3	5	4	5
Inyo	250	0	0	0	0	0	0	0	0
Kern (San Joaquin)	137	10	14	10	14	12	17	14	20
Kern (Mojave)	55								
Kings	55	1	2	1	2	2	2	2	3
Lake	150	1	1	1	1	1	1	1	1
Lassen		0	0	0	0	0	0	0	1
Los Angeles (South Coast)	137	24	35	24	35	29	42	34	50
Los Angeles (Mojave)	55								
Madera	55	2	3	2	3	3	4	3	5
Marin	80	1	1	1	1	1	1	1	2
Mariposa		0	0	0	0	0	0	0	0
Mendocino	220	0	1	0	1	1	1	1	1
Merced	55	4	6	4	6	5	7	6	8
Modoc		0	0	0	0	0	0	0	0
Mono	250	0	0	0	0	0	0	0	1
Monterey	137	2	2	2	2	2	3	2	3
Napa	80	1	1	1	1	1	2	1	2
Nevada	25	2	3	2	3	2	3	3	4

2006 CPVC Draft EIR  
 Table 27: Housing Projection VOC Comparisons  
 Continued

County	VOC Operational ToS (lbs/day)	2007 Project VOC lbs/day (365 day year)	2007 Project VOC lbs/working day (250 day year)	Avg Project VOC lbs/day (365 day year)	Avg Project VOC lbs/working day (250 day year)	+ 1 STDEV Project VOC lbs/day (365 day year)	+1 STDEV Project VOC lbs/working day (250 day year)	+ 2 STDEV Project VOC lbs/day (365 day year)	+2 STDEV Project VOC lbs/working day (250 day year)
Orange	55	8	12	8	12	10	15	12	17
Placer (Sac Valley)	82	7	10	7	9	8	12	9	14
Placer (Mountain)									
Placer (Lake Tahoe)									
Plumas	25	1	2	1	2	2	2	2	3
Riverside (South Coast)	55	41	59	40	59	49	72	58	85
Riverside (Salton Sea)									
Riverside (Mojave)	137								
Sacramento	65	14	21	14	20	17	25	20	30
San Benito	137	0	1	0	1	1	1	1	1
San Bernardino (South Coast)	55	21	31	21	30	25	37	30	44
San Bernardino (Mojave)	137								
San Diego		16	24	16	24	20	29	23	34
San Francisco	80	1	1	1	1	1	2	1	2
San Joaquin	55	9	13	9	13	11	16	13	18
San Luis Obispo	10	3	4	3	4	3	5	4	6
San Mateo	80	1	2	1	2	1	2	2	2
Santa Barbara	240	2	3	2	3	3	4	3	5
Santa Clara	80	5	8	5	8	6	9	7	11
Santa Cruz	137	1	2	1	2	1	2	2	2
Shasta	25	2	2	2	2	2	3	2	3
Sierra	25	0	0	0	0	0	0	0	0
Siskiyou		0	1	0	1	1	1	1	1
Solano (SF Bay)	80	4	5	4	5	4	6	5	7
Solano (Sac Valley)	82								
Sonoma (SF Bay)	80	2	3	2	3	3	4	3	5
Sonoma (North Coast)									
Stanislaus	55	6	8	6	8	7	10	8	12
Sutter	25	2	2	2	2	2	3	2	3
Tehama	25	1	1	1	1	1	1	1	2
Trinity	268	0	0	0	0	0	0	0	0
Tulare	55	3	5	3	5	4	6	5	7
Tuolumne	1000	1	1	1	1	1	2	1	2
Ventura	5/25/75	4	5	4	5	4	6	5	7
Yolo	82	2	3	2	3	3	4	3	4
Yuba	25	2	3	2	3	2	3	3	4
<b>TOTAL</b>		238	347	235	344	288	421	342	499

2006 CPVC Draft EIR  
Table 28: Housing Unit Demolitions

Table 1: E-5 County/State Population and Housing Estimates, 1/1/2006							
COUNTY	2000 Demo	2001 Demo	2002 Demo	2003 Demo	2004 Demo	2005 Demo	Avg demo / year
ALAMEDA	79	125	60	78	35	57	72
AMADOR	3	1	3	7	11	3	5
BUTTE	77	86	76	71	115	103	88
CALAVERAS	2		4	2	18	11	7
COLUSA	14	8	11	3	9	23	11
CONTRA COSTA	143	50	77	62	114	175	104
DEL NORTE	10	10	8	7	25	26	14
EL DORADO	35	51	41	76	59	62	54
FRESNO	72	160	175	195	206	195	167
GLENN	27	15	32	35	27	38	29
HUMBOLDT	28	35	26	25	28	77	37
IMPERIAL	57	23	3	53	46	74	43
INYO	3	8	2	6	6		5
KERN	128	155	198	228	113	139	160
KINGS	36	24	25	26	18	42	29
LAKE	30	62	42	71	145	87	73
LASSEN	12	12	18	8	2	16	11
LOS ANGELES	2688	2228	2143	2962	3136	2027	2,531
MADERA	15	3	13	27	28	26	19
MARIN	33	18	13	29	78	19	32
MARIPOSA	7	5	5	6	6	7	6
MENDOCINO	26	32	22	39	33	40	32
MERCED	31	2	20	36	42	41	29
MODOC	0		1	2		3	2
MONO	1	17	4	1			6
MONTEREY	94	54	165	44	88	184	105
NAPA	29	14	24	18	30	25	23
NEVADA	54	21	29	36	3	10	26
ORANGE	236	225	215	338	292	1608	486
PLACER	37	45	35	59	75	61	52
PLUMAS	0				1		1
RIVERSIDE	149	95	157	77	167	337	164
SACRAMENTO	195	126	209	39	297	175	174
SAN BENITO	3	14	1	12	11	5	8
SAN BERNARDINO	316	222	265	1162	419	273	443
SAN DIEGO	312	348	245	1069	2484	559	836
SAN FRANCISCO	42	92	136				90
SAN JOAQUIN	153	126	202	200	209	257	191
SAN LUIS OBISPO	118	60	78	67	83	75	80
SAN MATEO	147	84	154	125	115	134	127
SANTA BARBARA	59	103	145	91	77	46	87
SANTA CLARA	507	252	159	332	366	297	319
SANTA CRUZ	47		12	37	77	85	52
SHASTA	48	65	41	82	219	107	94
SIERRA	2	1	1	2	2	4	2
SISKIYOU	3	10	3	13	7	39	13
SOLANO	27	2	21	12	12	20	16
SONOMA	136	160	88	99	73	79	106
STANISLAUS	114	113	164	113	145	197	141
SUTTER	15	5	3	13	5	8	8
TEHAMA	1	1	1	8	23	15	8
TRINITY	0			1	2	4	2
TULARE	134	33	45	47	142	124	88
TUOLUMNE	7	10	22	11	17	27	16
VENTURA	122	29	32	56	40	61	57
YOLO	10	20	34	41	23	47	29
YUBA	6		25	16	23	25	19
CALIFORNIA	6,680	5,460	5,733	8,275	9,827	8,179	7,359
Source: California Department of Finance Demographic Research Unit E-5 Report, May 2006							

**Appendix B**  
**Notice of Preparation**

## Notice of Preparation

---

**To:** Office of the State Clearinghouse  
Office of Planning and Research  
1400 Tenth Street  
Sacramento, CA 95814

**Subject:** Notice of Preparation of a Draft Environmental Impact Report Notice of Preparation

**Lead Agency:** Department of Housing and Community Development  
Street Address: P.O. Box 952052  
City/State/Zip: Sacramento, CA 94252-2052  
Contact: Robin Gilb, Staff Counsel  
Phone: 916-324-5817  
Fax: 916-323-2815

Department of Housing and Community Development will be the Lead Agency and will prepare an environmental impact report for the project identified below. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the EIR prepared by our agency when considering your permit or other approval for the project.

**Due to the time limits mandated by State law, your response must be sent at the earliest possible date but not later than 30 days after receipt of this notice.**

Please send your response to Robin Gilb at the address shown above. We will need the name of a contact person in your agency.

**Project Title:** Proposed adoption of regulations permitting statewide residential use of chlorinated polyvinyl chloride (CPVC) plastic plumbing pipe without first making a finding of potential premature metallic pipe failure due to local water or soil conditions.

**Project Location:** Statewide

**Project Description:**

Evaluate the potential of significant adverse environmental effects resulting from the adoption of regulations allowing the use of chlorinated polyvinyl chloride (CPVC) pipe in residential buildings for potable water distribution without first making a finding of potential premature metallic pipe failure due to local water or soil conditions. The proposed regulations would apply to, and thus

could affect residential building construction, rehabilitation and repair in all areas of the State. Residential buildings include single-family dwellings, apartment houses, hotels and motels.

CPVC pipe is currently allowed and is used in California for potable water pipe in mobile homes, other manufactured homes, recreational vehicles, public drinking water treatment and distribution systems, and for general residential building uses in some local jurisdictions. For the majority of existing residential buildings in California, the potable water pipe is made of metal. The permitted use of metal pipe in new or existing residential buildings would continue under the proposed regulations.

### **Potentially Significant Environmental Effects:**

#### **1) Air Quality**

- a) The project has the potential to violate an air quality standard or contribute to an existing or projected air quality violation.

CPVC pipe installation and repair requires the use of solvent-based adhesives containing volatile organic compounds (VOC). Although significant adhesive use should only occur during a limited construction phase, there is a possibility that the VOC effects could contribute to an existing or projected local air quality violation. This potential impact will be addressed in the EIR.

- b) The project has the potential to result in a cumulatively net increase of a criteria pollutant for which a project region is in non-attainment under an applicable federal or state ambient air quality standard.

CPVC pipe installation and repair requires the use of solvent-based adhesives containing volatile organic compounds (VOC). Although significant adhesive use should only occur during a limited construction phase, there is a possibility that the VOC effects could result in a cumulatively considerable net increase of any criteria pollutant for which the local area is non-attainment under an applicable federal or state ambient air quality standard (including the release of emissions which exceed quantitative thresholds for ozone precursors). This potential impact will be addressed in the EIR.

**2) Water Quality**

The project has the potential to degrade water quality. Immediately after CPVC pipe installation, water flushed through the system may contain chemicals with the capacity to degrade water quality. This potential impact will be addressed in the EIR.

**3) Cumulative Impacts**

The project has the potential for impacts that are individually limited, but cumulatively considerable. "Cumulatively considerable" means that the incremental effects of the project may be considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. Areas of concern include air quality and drinking water quality. These potential impacts will be addressed in the EIR.

**4) Human Health**

The project may have environmental effects which can cause adverse effects on human beings, either directly or indirectly. Areas of concern include worker safety, air quality, and drinking water quality. These potential impacts will be addressed in the EIR.

Date: 1/11/06Signature: Judy Nevis

Name: Judy Nevis

Title: Acting Director

Telephone: (916) 445-4775

**Appendix C**  
**Agency Scoping Meeting**

Division of Legal Affairs  
1800 Third Street, Suite 440  
P.O. Box 952052  
Sacramento, CA 94252-2052  
(916) 323-7288  
FAX (916) 323-2815



## AGENCY INVITATION TO SCOPING MEETING

DATE: April 3, 2006

TO: State and Local Agencies

FROM: Robin Gilb  
Staff Counsel  
Department of Housing and Community Development

SUBJECT: The Department of Housing and Community Development (**HCD**) Proposed adoption of regulations permitting statewide residential use of chlorinated polyvinyl chloride (**CPVC**) plastic plumbing pipe without first making a finding of potential premature metallic pipe failure due to local water or soil conditions. (Notice of Preparation of EIR) **SCH# 2006012044**, Scoping Meeting

The Governor's Office of Planning and Research (**OPR**), at the request of HCD, will host an interagency scoping meeting regarding the proposed amendment to the California Plumbing Code. You are encouraged to attend this scoping meeting.

### The scoping meeting will be held at the following time and location:

Date: Monday, May 1, 2006

Time: 1:00 pm to 4:00 pm

Place: Governor's Office of Planning and Research  
Second Floor Conference Room  
1400 Tenth Street  
Sacramento, CA 95814

Teleconference: Call in phone number: 916-227-1123

The proceedings will be recorded and transcribed.

Those Agencies that cannot attend are welcome to call in or send a written response directly to HCD:

Department of Housing and Community Development  
Robin Gilb, Room 440  
PO Box 952052  
Sacramento, CA 94252-2052

Please be prepared to discuss your agency's environmental and permitting concerns with the proposed project.

**Please confirm attendance by a representative of your department or agency by calling Robin Gilb at (916) 324-5817.**

The goals of this meeting are to:

- (1) Determine the scope and content of the Environmental Impact Report under preparation by HCD; and
- (2) Identify any environmental and permitting concerns responsible agencies may have with the proposed project.

**In general the proposed project consists of:**

Adoption of regulations allowing the unrestricted use of CPVC pipe and fittings in residential potable water distribution.

**Background:**

CPVC pipe is currently allowed and is used in California for potable water pipe in mobile homes, other manufactured homes, recreational vehicles, public drinking water treatment and distribution systems, and for general residential building uses in some local jurisdictions. In 2000, HCD approved a mitigated negative declaration (**MND**) that allowed the use of CPVC pipe when a building official first makes a finding of potential premature metallic pipe failure due to local water or soil conditions. Since the environmental effects of individual household use were considered in the MND, the current Project EIR will only evaluate the effects related to the expansion of CPVC use and any new significant information related to single household use that was not considered in the MND. The Notice of Preparation for the EIR was distributed to State Agencies on January 11, 2006.

**HCD currently considers the following to be potentially significant environmental effects:**

**1) Air Quality**

- a) The project has the potential to violate an air quality standard or contribute to an existing or projected air quality violation.

CPVC pipe installation and repair requires the use of solvent-based adhesives containing volatile organic compounds (VOC). Although significant adhesive use should only occur during a limited construction phase, there is a possibility that the VOC effects could contribute to an existing or projected local air quality violation.

- b) The project has the potential to result in a cumulatively considerable net increase of a criteria pollutant for which a project region is in non-attainment under an applicable federal or state ambient air quality standard.

CPVC pipe installation and repair requires the use of solvent-based adhesives containing volatile organic compounds (VOC). Although significant adhesive use should only occur during a limited construction phase, there is a possibility that the VOC effects could result in a cumulatively considerable net increase of a criteria pollutant for which the local area is non-attainment under an applicable federal or state ambient air quality standard (including the release of emissions which exceed quantitative thresholds for ozone precursors).

**2) Water Quality**

The project has the potential to degrade the quality of waters of the State. Immediately after CPVC pipe installation, water flushed through the system will contain chemicals that may survive the water treatment process and be discharged into waters of the State.

**3) Cumulative Impacts**

The project has the potential for impacts that are individually limited, but cumulatively considerable. "Cumulatively considerable" means that the incremental effects of the project may be considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. Areas of concern include air quality and State water quality.

**4) Human Health**

The project may have environmental effects which can cause adverse effects on human beings, either directly or indirectly, specifically, worker safety.

**Agenda****Scoping Meeting  
HCD Adoption of CPVC-related Plumbing Code Regulations****May 1, 2006  
1pm- 4pm**

1. Brief description of the proposed project, environmental impacts and anticipated schedule (HCD)
2. Identification of CEQA environmental documentation requirements (Agencies)
3. Identification of any other information requirements of responsible agencies (Agencies)
4. Discussion; Questions and Answers (All)
5. Adjourn

**Attachment:**

Agency Distribution List  
Notice of Preparation

**Agency, City, & County Distribution list for Scoping Meeting for  
SCH # 2006012044**

**Agencies**

Department of Health  
Services, DWEM  
Robin Hook  
FAX 916-449-5656

Department of Health  
Services, Occupational  
Health  
FAX 510-620-5743

Department of Toxic  
Substance Control  
Office of Environmental  
Analysis and  
Regulations  
FAX (916) 323-3215

State Water Resources  
Control Board, Clean  
Water Program  
Rik Rasmussen  
FAX (916) 341-5550

Air Resources Board  
Office of the Chair  
FAX 916-322-4743

California Integrated  
Waste Management  
Board  
Sue O'Leary  
FAX: (916) 319-7456

State Water Resources  
Control Board  
Division of Water  
Quality  
CEQA Coordinator  
FAX: (916) 341-5470

Department of Toxic  
Substances Control  
Chief of Planning &  
Environmental Analysis  
Guenther Moskat  
FAX: (916) 324-1788

**Counties**

Alameda  
Alpine  
Amador  
Butte  
Calaveras  
Colusa  
Contra Costa  
Del Norte  
El Dorado  
Fresno  
Glenn  
Humboldt  
Imperial  
Inyo  
Kern  
Kings  
Lake  
Lassen  
Los Angeles  
Madera  
Marin  
Mariposa  
Mendocino  
Merced  
Modoc  
Mono  
Monterey  
Napa  
Nevada  
Orange  
Placer  
Plumas  
Riverside  
Sacramento  
San Benito  
San Bernardino  
San Diego  
San Francisco  
San Joaquin  
San Luis Obispo  
San Mateo  
Santa Barbara  
Santa Clara  
Santa Cruz  
Shasta  
Sierra

Siskiyou  
Solano  
Sonoma  
Stanislaus  
Sutter  
Tehama  
Trinity  
Tulare  
Tuolumne  
Ventura  
Yolo  
Yuba

**Cities**

Adelanto  
Agoura Hills  
Alameda  
Albany  
Alhambra  
Aliso Viejo  
Alturas  
Amador City  
American Canyon  
Anaheim  
Anderson  
Angels Camp  
Antioch  
Apple Valley  
Arcadia  
Arcata  
Arroyo Grande  
Artesia  
Arvin  
Atascadero  
Atherton  
Atwater  
Auburn  
Avalon  
Avenal  
Azusa  
Bakersfield  
Baldwin Park  
Banning  
Barstow  
Beaumont  
Bell  
Bell Gardens

Scoping Meeting Distribution List SCH# 2006012044

Bellflower	Colma	Fairfield
Belmont	Colton	Farmersville
Belvedere	Colusa	Ferndale
Benicia	Commerce	Fillmore
Berkeley	Compton	Firebaugh
Beverly Hills	Concord	Folsom
Big Bear Lake	Corcoran	Fontana
Biggs	Corning	Fort Bragg
Bishop	Corona	Fort Jones
Blue Lake	Coronado	Fortuna
Blythe	Corte Madera	Foster City
Bradbury	Costa Mesa	Fountain Valley
Brawley	Cotati	Fowler
Brea	Covina	Fremont
Brentwood	Crescent City	Fresno
Brisbane	Cudahy	Fullerton
Buellton	Culver City	Galt
Buena Park	Cupertino	Garden Grove
Burbank	Cypress	Gardena
Burlingame	Daly City	Gilroy
Calabasas	Dana Point	Glendale
Calexico	Danville	Glendora
California City	Davis	Goleta
Calimesa	Del Mar	Gonzales
Calipatria	Del Rey Oaks	Grand Terrace
Calistoga	Delano	Grass Valley
Camarillo	Desert Hot Springs	Greenfield
Campbell	Diamond Bar	Gridley
Canyon Lake	Dinuba	Grover Beach
Capitola	Dixon	Guadalupe
Carlsbad	Dorris	Gustine
Carmel-by-the-Sea	Dos Palos	Half Moon Bay
Carpinteria	Downey	Hanford
Carson	Duarte	Hawaiian Gardens
Cathedral City	Dublin	Hawthorne
Ceres	Dunsmuir	Hayward
Cerritos	East Palo Alto	Healdsburg
Chico	El Cajon	Hemet
Chino	El Centro	Hercules
Chino Hills	El Cerrito	Hermosa Beach
Chowchilla	El Monte	Hesperia
Chula Vista	El Segundo	Hidden Hills
Citrus Heights	Elk Grove	Highland
Claremont	Emeryville	Hillsborough
Clayton	Encinitas	Hollister
Clearlake	Escalon	Holtville
Cloverdale	Escondido	Hughson
Clovis	Etna	Huntington Beach
Coachella	Eureka	Huntington Park
Coalinga	Exeter	Huron
Colfax	Fairfax	Imperial

Scoping Meeting Distribution List SCH# 2006012044

Imperial Beach	Los Angeles	Oakley
Indian Wells	Los Banos	Oceanside
Indio	Los Gatos	Ojai
Industry	Loyalton	Ontario
Inglewood	Lynwood	Orange
Ione	Madera	Orange Cove
Irvine	Malibu	Orinda
Irwindale	Mammoth Lakes	Orland
Isleton	Manhattan Beach	Oroville
Jackson	Manteca	Oxnard
Kerman	Maricopa	Pacific Grove
King City	Marina	Pacifica
Kingsburg	Martinez	Palm Desert
La Canada Flintridge	Marysville	Palm Springs
La Habra	Maywood	Palmdale
La Habra Heights	McFarland	Palo Alto
La Mesa	Mendota	Palos Verdes Estates
La Mirada	Menlo Park	Paradise
La Palma	Merced	Paramount
La Puente	Mill Valley	Parlier
La Quinta	Millbrae	Pasadena
La Verne	Milpitas	Paso Robles
Lafayette	Mission Viejo	Patterson
Laguna Beach	Modesto	Perris
Laguna Hills	Monrovia	Petaluma
Laguna Niguel	Montague	Pico Rivera
Laguna Woods	Montclair	Piedmont
Lake Elsinore	Monte Sereno	Pinole
Lake Forest	Montebello	Pismo Beach
Lakeport	Monterey	Pittsburg
Lakewood	Monterey Park	Placentia
Lancaster	Moorpark	Placerville
Larkspur	Moraga	Pleasant Hill
Lathrop	Moreno Valley	Pleasanton
Lawndale	Morgan Hill	Plymouth
Lemon Grove	Morro Bay	Point Arena
Lemoore	Mountain View	Pomona
Lincoln	Mt. Shasta	Port Hueneme
Lindsay	Murrieta	Porterville
Live Oak	Napa	Portola
Livermore	National City	Portola Valley
Livingston	Needles	Poway
Lodi	Nevada City	Rancho Cordova
Loma Linda	Newark	Rancho Cucamonga
Lomita	Newman	Rancho Mirage
Lompoc	Newport Beach	Rancho Palos Verdes
Long Beach	Norco	Rancho Santa Margarita
Loomis	Norwalk	Red Bluff
Los Alamitos	Novato	Redding
Los Altos	Oakdale	Redlands
Los Altos Hills	Oakland	Redondo Beach

Scoping Meeting Distribution List SCH# 2006012044

Redwood City	Santa Clarita	Truckee
Reedley	Santa Cruz	Tulare
Rialto	Santa Fe Springs	Tulelake
Richmond	Santa Maria	Turlock
Ridgecrest	Santa Monica	Tustin
Rio Dell	Santa Paula	Twentynine Palms
Rio Vista	Santa Rosa	Ukiah
Ripon	Santee	Union City
Riverbank	Saratoga	Upland
Riverside	Sausalito	Vacaville
Rocklin	Scotts Valley	Vallejo
Rohnert Park	Seal Beach	Ventura
Rolling Hills	Seaside	Vernon
Rolling Hills Estates	Sebastopol	Victorville
Rosemead	Selma	Villa Park
Roseville	Shafter	Visalia
Ross	Shasta Lake	Vista
Sacramento	Sierra Madre	Walnut
Salinas	Signal Hill	Walnut Creek
San Anselmo	Simi Valley	Wasco
San Bernardino	Solana Beach	Waterford
San Bruno	Soledad	Watsonville
San Carlos	Solvang	Weed
San Clemente	Sonoma	West Covina
San Diego	Sonora	West Hollywood
San Dimas	South El Monte	West Sacramento
San Fernando	South Gate	Westlake Village
San Francisco	South Lake Tahoe	Westminster
San Gabriel	South Pasadena	Westmorland
San Jacinto	South San Francisco	Wheatland
San Joaquin	St. Helena	Whittier
San Jose	Stanton	Williams
San Juan Bautista	Stockton	Willits
San Juan Capistrano	Suisun City	Willows
San Leandro	Sunnyvale	Windsor
San Luis Obispo	Susanville	Winters
San Marcos	Sutter Creek	Woodlake
San Marino	Taft	Woodland
San Mateo	Tehachapi	Woodside
San Pablo	Tehama	Yorba Linda
San Rafael	Temecula	Yountville
San Ramon	Temple City	Yreka
Sand City	Thousand Oaks	Yuba City
Sanger	Tiburon	Yucaipa
Santa Ana	Torrance	Yucca Valley
Santa Barbara	Tracy	
Santa Clara	Trinidad	

## **Appendix D**

# **Notice of Completion for Draft EIR**

Notice of Completion & Environmental Document Transmittal

SCH # \_\_\_\_\_

Mail to: State Clearinghouse, P. O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613

For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

Project Title: \_\_\_\_\_

Lead Agency: \_\_\_\_\_ Contact Person: \_\_\_\_\_

Mailing Address: \_\_\_\_\_ Phone: \_\_\_\_\_

City: \_\_\_\_\_ Zip: \_\_\_\_\_ County: \_\_\_\_\_

Project Location:

County: \_\_\_\_\_ City/Nearest Community: \_\_\_\_\_ Total Acres: \_\_\_\_\_

Cross Streets: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Assessor's Parcel No. \_\_\_\_\_ Section: \_\_\_\_\_ Twp. \_\_\_\_\_ Range: \_\_\_\_\_ Base: \_\_\_\_\_

Within 2 Miles: State Hwy #: \_\_\_\_\_ Waterways: \_\_\_\_\_

Airports: \_\_\_\_\_ Railways: \_\_\_\_\_ Schools: \_\_\_\_\_

Document Type:

- CEQA: [ ] NOP [ ] Draft EIR NEPA: [ ] NOI Other: [ ] Joint Document
[ ] Early Cons [ ] Supplement to EIR (Note prior SCH # below) [ ] EA [ ] Final Document
[ ] Neg Dec [ ] Subsequent EIR (Note prior SCH # below) [ ] Draft EIS [ ] Other \_\_\_\_\_
[ ] Mit Neg Dec [ ] Other \_\_\_\_\_ [ ] FONSI

Local Action Type:

- [ ] General Plan Update [ ] Specific Plan [ ] Rezone [ ] Annexation
[ ] General Plan Amendment [ ] Master Plan [ ] Prezone [ ] Redevelopment
[ ] General Plan Element [ ] Planned Unit Development [ ] Use Permit [ ] Coastal Permit
[ ] Community Plan [ ] Site Plan [ ] Land Division (Subdivision, etc.) [ ] Other \_\_\_\_\_

Development Type:

- [ ] Residential: Units \_\_\_\_\_ Acres \_\_\_\_\_ [ ] Water Facilities: Type \_\_\_\_\_ MGD \_\_\_\_\_
[ ] Office: Sq.ft. \_\_\_\_\_ Acres \_\_\_\_\_ Employees \_\_\_\_\_ [ ] Transportation: Type \_\_\_\_\_
[ ] Commercial: Sq.ft. \_\_\_\_\_ Acres \_\_\_\_\_ Employees \_\_\_\_\_ [ ] Mining: Mineral \_\_\_\_\_
[ ] Industrial: Sq.ft. \_\_\_\_\_ Acres \_\_\_\_\_ Employees \_\_\_\_\_ [ ] Power: Type \_\_\_\_\_ MW \_\_\_\_\_
[ ] Educational \_\_\_\_\_ [ ] Waste Treatment: Type \_\_\_\_\_ MGD \_\_\_\_\_
[ ] Recreational \_\_\_\_\_ [ ] Hazardous Waste: Type \_\_\_\_\_
[ ] Other: \_\_\_\_\_

Project Issues Discussed in Document:

- [ ] Aesthetic/Visual [ ] Fiscal [ ] Recreation/Parks [ ] Vegetation
[ ] Agricultural Land [ ] Flood Plain/Flooding [ ] Schools/Universities [ ] Water Quality
[ ] Air Quality [ ] Forest Land/Fire Hazard [ ] Septic Systems [ ] Water Supply/Groundwater
[ ] Archeological/Historical [ ] Geologic/Seismic [ ] Sewer Capacity [ ] Wetland/Riparian
[ ] Biological Resources [ ] Minerals [ ] Soil Erosion/Compaction/Grading [ ] Growth Inducement
[ ] Coastal Zone [ ] Noise [ ] Solid Waste [ ] Land Use
[ ] Drainage/Absorption [ ] Population/Housing Balance [ ] Toxic/Hazardous [ ] Cumulative Effects
[ ] Economic/Jobs [ ] Public Services/Facilities [ ] Traffic/Circulation [ ] Other \_\_\_\_\_

Present Land Use/Zoning/General Plan Designation:

Project Description: (please use a separate page if necessary)

**Reviewing Agencies Checklist**

continued

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "X". If you have already sent your document to the agency please denote that with an "S".

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Air Resources Board               | <input type="checkbox"/> Office of Emergency Services                                   |
| <input type="checkbox"/> Boating & Waterways, Department of           | <input type="checkbox"/> Office of Historic Preservation                                |
| <input type="checkbox"/> California Highway Patrol                    | <input type="checkbox"/> Parks & Recreation   |
| <input type="checkbox"/> Caltrans District # _____                    | <input type="checkbox"/> Pesticide Regulation, Department of                            |
| <input type="checkbox"/> Caltrans Division of Aeronautics             | <input type="checkbox"/> Public Utilities Commission                                    |
| <input type="checkbox"/> Caltrans Planning                            | <input type="checkbox"/> Reclamation Board  |
| <input type="checkbox"/> Coachella Valley Mountains Conservancy       | <input type="checkbox"/> Regional WQCB # _____  |
| <input type="checkbox"/> Coastal Commission                           | <input type="checkbox"/> Resources Agency   |
| <input type="checkbox"/> Colorado River Board Commission              | <input type="checkbox"/> S.F. Bay Conservation & Development Commission                 |
| <input type="checkbox"/> Conservation, Department of                  | <input type="checkbox"/> San Gabriel & Lower Los Angeles Rivers & Mountains Conservancy |
| <input type="checkbox"/> Corrections, Department of                   | <input type="checkbox"/> San Joaquin River Conservancy                                  |
| <input type="checkbox"/> Delta Protection Commission                  | <input type="checkbox"/> Santa Monica Mountains Conservancy                             |
| <input type="checkbox"/> Education, Department of                     | <input type="checkbox"/> State Lands Commission   |
| <input type="checkbox"/> Office of Public School Construction         | <input type="checkbox"/> SWRCB: Clean Water Grants                                      |
| <input checked="" type="checkbox"/> Energy Commission                 | <input type="checkbox"/> SWRCB: Water Quality   |
| <input type="checkbox"/> Fish & Game Region # _____                   | <input type="checkbox"/> SWRCB: Water Rights  |
| <input type="checkbox"/> Food & Agriculture, Department of            | <input type="checkbox"/> Tahoe Regional Planning Agency                                 |
| <input type="checkbox"/> Forestry & Fire Protection                   | <input checked="" type="checkbox"/> Toxic Substances Control, Department of             |
| <input type="checkbox"/> General Services, Department of              | <input type="checkbox"/> Water Resources, Department of                                 |
| <input checked="" type="checkbox"/> Health Services, Department of    | <input type="checkbox"/> Other _____  |
| <input type="checkbox"/> Housing & Community Development              | <input type="checkbox"/> Other _____  |
| <input checked="" type="checkbox"/> Integrated Waste Management Board |   |
| <input type="checkbox"/> Native American Heritage Commission          |   |

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**Local Public Review Period (to be filled in by lead agency)**

Starting Date \_\_\_\_\_ Ending Date \_\_\_\_\_

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**Lead Agency (Complete if applicable):**

Consulting Firm: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 City/State/Zip: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Phone: (\_\_\_\_) \_\_\_\_\_

**Applicant:** \_\_\_\_\_  
 Address: \_\_\_\_\_  
 City/State/Zip: \_\_\_\_\_  
 Phone: (\_\_\_\_) \_\_\_\_\_

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 Signature of Lead Agency Representative

*Robert Guth*

Date 7.31.06