APPENDIX C

RESPONSES TO COMMENTS ON THE NOP/IS

Comment Letter #1:	**ELRAP**
Comment Letter #2:	**Law Offices of Smiland & Khachigian**
Comment Letter #3:	**Sherwin Williams**
Comment Letter #4:	**National Paint & Coatings Association**
Comment Letter #5:	**PPG Industries, Inc.**
Comment Letter #6:	**Benjamin Moore & Co.**
Comment Letter #7:	**Bona**
Comment Letter #8:	**Du Pont**
Comment Letter #9:	**Carboline Company**
Comment Letter #10:	**Southern California Association of Governments**

COMMENT LETTER #1

ELRAP

COMMENT LETTER #1
ELRAP
December 1, 1998

1-1 Comment letter #1 consists of a series of letters and reference materials. To distinguish between different documents in this comment letter, the following protocol will be followed: the first document following the initial comment letter will be comment letter #1a, the second document following the initial comment letter will be comment letter #1b, etc.

Since release of the Notice of Preparation/Initial Study (NOP/IS), proposed amended Rule (PAR) 1113 has been modified. Responses to comments received on the NOP/IS and the project description in Draft Subsequent Environmental Assessment (SEA) for PAR 1113 reflect the most current version of PAR 1113.

1-2 The statement identified by the commentator does not pre-judge the conclusions of the analysis of potential environmental impacts from PAR 1113. It is a statement of the goals of the project. This is consistent with CEQA Guidelines §15124(b) which states that the project description should include, " A statement of the Objectives sought by the proposed project. Although CEQA Guidelines §15124(b) refers specifically to the project description in an environmental impact report (EIR), this does not preclude stating the project objectives in other types of CEQA documents.

1-3 The commentator's assertion that the passage cited from the NOP/IS is speculation that is "… grossly over-simplified, inaccurate, and misleading," demonstrates a fundamental misunderstanding. Air quality modeling performed for the 1997 AQMP demonstrates not only the contribution VOC emissions make toward ambient ozone concentrations but also the need for further reducing VOC emissions to comply with the national and California ambient air quality standards. Further, ground level ozone formation is a result of complex chemical reactions involving both VOCs and NOx. VOCs react with hydroxyl radicals to form organic peroxyl radicals which subsequently react with nitric oxide (NO) to form nitrogen dioxide (NO_2). Nitrogen dioxide photo-disassociates to form NO and oxygen atoms. The oxygen atoms rapidly associate with molecular oxygen to form ozone. The amount of ozone formed is a function of the number of conversions of NO to NO_2 due to the organic "chain reactions." When VOC emissions are lowered, the number of NO-to-NO_2 conversions decrease. Discussions on the atmospheric chemistry of ozone formation can be found in the 1991 National Research Council report, "Rethinking the Ozone Problem in Urban and Regional Air Pollution." Specifically, page 116 states… "the presence of VOCs causes enhanced NO-to-NO_2 conversion and hence the production of concentrations of ozone that exceed those encountered in the clean background troposphere." Additionally, the SCAQMD's preliminary analysis indicates that additional reductions of VOC and NOx emissions beyond those included in the AQMP will likely be necessary to meet the recently promulgated National Ambient Air Quality Standards for ozone and PM2.5.

Because of the extreme ozone nonattainment status of the South Coast Air Basin, the SCAQMD must control both NOx and VOC emissions if the area is to achieve ambient air quality standards. The AQMP for this district targets all feasible, cost-effective VOC emission reduction strategies from sources under its jurisdiction.

1-4 The Commentator is referred to response to comment #1-1.

1-5 The emission reduction estimates contained in the NOP/IS were preliminary estimates of potential emission reductions from reducing the VOC content of the specified architectural coating categories. The SCAQMD has acknowledged the eight issues cited by the commentator and included them in the NOP/IS indicating that each issue will be further

addressed in the Draft SEA. For a complete discussion of the eight issues and their effects on potential VOC emissions reductions, the commentator is referred to Chapter 4.

1-6 The project alternatives concepts included in the NOP/IS have been further discussed during Industry Working Group meetings and evaluated by staff. Some of these alternatives have been determined to be infeasible, some have been incorporated into PAR 1113 and some form the basis of one or more project alternatives. The commentator is referred to Chapter 5 for a discussion of project alternatives considered and rejected as infeasible or evaluated and compared to PAR 1113.

1-7 Adoption of PAR 1113 is not expected to contribute to any significant housing cost increases because reformulated coatings are currently being sold at comparable prices as "traditional" higher-VOC coatings. Direct economic impacts are not required to be analyzed pursuant to CEQA unless they also have a significant, direct effect on physical environmental parameters. Cost impacts associated with implementation of PAR 1113 are discussed in the District's Socioeconomic Impact Assessment (under separate cover).

1-8 The issues referred to by the commentator from the NOP/IS have been evaluated in Chapter 4 of the Draft SEA. The commentator, therefore, is referred to Chapter 4. With regard to the July 26 ELRAP document mentioned by the commentator, this document and specific responses to this document can be found in the Final SEA for PAR 1113 (AQMD No. 960626DWS).

1-9 In this comment the commentator asserts that transportation/circulation impacts will occur as a result of implementing PAR 1113 in part because the drying times of low VOC coatings are longer than the drying times for conventional coatings. As a result, jobs will take more than one day to complete. It is assumed here that the biggest concern regarding drying time would be for primers, sealers, and undercoaters since, by definition, these require additional topcoats. As part of the analysis of PAR 1113, staff evaluated coating product data sheets (which typically include drying times) for a large number of conventional and low VOC coatings (see the tables in Appendix D and the related summary tables in Chapter 4). The available information from product data sheets indicates that low VOC primers, sealers, and undercoaters have a slightly shorter drying time, on average, than conventional coatings. On average, the drying time for low VOC quick-dry primers, sealers, and undercoaters is comparable to the drying time for the same categories of conventional coatings. Finally, the drying time for low VOC stains is substantially shorter than the drying time for conventional stains. Consequently, the assertion that low VOC coatings have longer drying times that will require more trips over more days is not supported by coating product information sheets.

Regarding surface preparation, staff evaluated this characteristic as part of the evaluation of coating product data sheets mentioned above (see the tables in Appendix D and the summary tables in Chapter 4 of the Draft SEA). Where information or data are provided, the information indicated that low VOC coatings do not require substantially different surface preparation than conventional coatings. As a result, the time necessary to prepare a surface for coating is approximately equivalent for conventional and low VOC coatings.

The issue of topcoats is related to solids content and the amount of area a coating will cover. The review of coating product data sheets indicated that for industrial maintenance floor coatings, low VOC coatings tended to have a higher solids content, with a slightly, but not substantially lower average coverage area than conventional coatings. For most other coating categories affected by PAR 1113, the solids content and area of coverage for low VOC coatings was, on average, comparable to conventional coatings although some categories, e.g., quick-dry primers, sealers, and undercoaters and stains, had slightly less coverage than conventional coatings in these categories. As a result, since solids content and coverage area for low VOC coatings are comparable to conventional coatings, some

additional trips may occur district-wide, but not enough to create significant adverse transportation impacts.

Extra touch-up and repair and more frequent coating applications are related to durability qualities of coatings. Staff reviewed coating product data sheets (see the tables in Appendix D and the relevant summary tables in Chapter 4) to obtain durability information for low VOC coatings and conventional coatings. Based upon the a comparison of the coating product information sheets, staff concluded that low VOC coatings have durability characteristics comparable to conventional coatings. Based upon staff research of coating product information sheets, no significant adverse transportation impacts are anticipated from implementing PAR 1113.

The commentator also asserts that the proposed amendments will result in increased shipping of coatings formulated with acetone. First, many coatings are already formulated with acetone and, therefore, are already being transported in the district. Second, many conventional coatings are formulated with other solvents that are considered as flammable as acetone, e.g., t-butyl acetate, toluene, xylene, MEK, isopropanol, butyl acetate, and isobutyl alcohol. Based upon staff review of coating product information sheets, future compliant low VOC coatings are expected to be formulated with less or non-flammable materials such as texanol, propylene glycol, etc. Consequently, it is anticipated that future compliant coatings will follow the existing trend of moving away from hazardous coating formulations to less or non-hazardous formulations. For a more complete analysis of this issue, the commentator is referred to the "Hazard Impacts" section of Chapter 4.

1-10 It should be noted that the 1992 article cited by the commentator refers to past and possibly current problems concerning homeowners who illegally dispose of currently available coatings into storm drains. The issues raised in this comment relate to potential water quality impacts resulting from the illegal dumping of wastewater with paint residue into storm drains. Although this impact appears to be an existing problem, it has been addressed in the "Water Impacts" section of Chapter 4 in the Draft SEA

1-11 The SCAQMD disagrees with the commentator's assertion that significantly greater quantities of future compliant coatings would need to be used compared to existing coatings. Future compliant coatings are not expected to be used in greater quantities than currently available coatings and, even it this were the case, use of materials in future compliant coatings would not constitute wasteful or inefficient use. Therefore, no significant adverse impacts to nonrenewable resources are anticipated

1-12 As a result of comments received on the Draft SEA for PAR 1113, Chapter 4 includes an analysis of hazards associated with increased usage of future compliant coatings formulated with acetone. The analysis looked at two factors: (1) the probability of increased incidents as a result of the increased usage of acetone-based coatings; and (2) the consequences associated with the incidents. With regard to the probability of more incidents as a result of PAR 1113, it is expected that this will not occur because the number of shipments of architectural coatings will not increase as a result of implementing PAR 1113. While the total amount of acetone shipped may increase, the statistical probability of a truck accident from transporting AIM coatings remains unchanged. In other words, the number of vehicle trips associated with the transporting of AIM coatings to and from various manufacturers, distributors, stores, contractors, and do-it-yourselfers is expected to remain constant after implementing PAR 1113. Based upon the preceding information, hazard impacts are not expected to change appreciably as a result of adopting PAR 1113.

In the context of the consequences associated with incidents, this was analyzed from two perspectives: (1) toxicity of release; and (2) flammability. It is expected that an incident (i.e., spill or explosion), involving the transporting of acetone-based coatings will produce less toxic impacts than other conventional coatings containing solvents such as toluene, xylene, MEK, etc. Acetone has a higher TLV (750 ppm), PEL (750 ppm)

and IDLH (20,000 ppm) compared to other conventional solvents. These high exposure limits coupled with acetone's higher vapor pressure indicate that acetone would evaporate quickly in a spill such that extended human exposure to significant levels that could cause harm are unlikely. Further, acetone is also considered to have the same or less toxic effects as other conventional solvents. As a result, even if exposure were to occur, which is highly unlikely, the human health effects would be the same or less compared with existing architectural coatings.

Information received from various fire authorities indicates that even though acetone is slightly more flammable than other conventional solvents it would be treated the same in the event of a fire or explosion because conventional solvents are also flammable. Since PAR 1113 does not increase the probability that a transport accident will occur and the fire authorities would handle this type of incident the same compared with coatings formulated with conventional solvents as with acetone-based coatings, the hazard impacts are not considered to be significant.

1-13 The SCAQMD disagrees with the commentator's assertion that noise impacts will increase with the use of future compliant low VOC coatings, especially those applications were coatings are applied by brush or roller. Coating application systems that rely on pressure and a power source are available that have very low noise levels associated with them. In any event, as with any new technology, a "learning curve" may be involved, whereby, once trained, workers should be able to apply future compliant coatings in approximately the same amount of time as currently available coatings. As a side note, staff has investigated whether or not gasoline-powered spray equipment are available. No spray equipment manufacturers were found that manufactured such equipment. Consequently, no significant adverse noise impacts are anticipated from implementing PAR 1113.

1-14 Potential adverse impacts to local fire protection services relative to greater use of acetone from implementing PAR 1113 has been evaluated in Chapter 4. The commentator is, therefore, referred to Chapter 4 of the Draft SEA. With respect to schools and other public services identified by the commentator, no significant adverse effects are anticipated. Regarding future job losses resulting from implementing PAR 1113, the commentator is referred to the Socioeconomic Economic Impact Assessment in the PAR 1113 Staff Report.

1-15 SCAQMD staff does not concur with the commentator's assumption that significantly more coatings will be used as a result of this rule, which would then result in increased electrical power needed to manufacture the low-VOC coatings or that more coatings will cause the generation of more solid waste from the disposal of empty paint cans. Manufacturers are required to supply lower-VOC products, not supply more coatings. In many areas, metal paint cans are recycled. Further, even if it were true that greater volumes future compliant coatings per unit area would be necessary, the additional power demand necessary to produce these additional volumes would not be considered an inefficient or wasteful use of energy or a significant impact.

1-16 SCAQMD staff does not concur with the commentator's assertion that significant aesthetic impacts will result from the use of low-VOC coatings due to defects in appearance after application because the rule contains a compliance schedule sufficient for coating formulators to produce acceptable quality low-VOC products. The current compliance proposal is a modification of an earlier version of PAR 1113 and is the result of input received during the Industry Working Group meetings. The current compliance schedule should ensure that formulators have sufficient time to reformulate products which exhibit the desired performance characteristics.

1-17 SCAQMD staff does not concur with the commentator's assertion that significant cultural resource impacts will occur due to potential negative impacts on the maintenance of "historic and ethnically significant architectural structures in Southern California." First, industrial

maintenance coatings are not typically used for residential use or for use in painting the outside of buildings, although some nonflat coatings may be used for a structure's exterior trim. In spite of this, based upon information on currently available compliant products, performance characteristics of existing and reformulated products should be sufficient to meet the weathering impacts on outdoor structures. That is particularly true in light of the fact that the rule contains a compliance extension requested in this comment letter to ensure that newly developed products exhibit these characteristics.

The commentator cites a 1997 *Los Angeles Times* article and a letter to the editor from the commentator implying that the Craftsman- and Victorian-style bungalows are being stuccoed because of the high cost and greater frequency of painting these houses. This assertion demonstrates a fundamental misunderstanding of the issue involved. The high costs are due to restoration of houses that have been poorly maintained for years, if not decades. Restoration of these houses require substantial repair, as well as surface reconstruction and preparation before the house is even painted. As a result it is much simpler and cheaper to stucco a house than perform the needed repairs to restore the historical architectural integrity. Further, stucco is applied to the exterior walls, which are typically painted with flat coatings. The currently proposed amendments do not modify the VOC content of flat coatings In any event, painting these houses is a relatively small part of the cost of restoring these old houses.

1-18 SCAQMD staff does not concur with the commentator's assertion that additional recreational resources will be required as a result of workers allegedly made jobless by the proposed amendments. SCAQMD staff has conducted socioeconomic analysis which showed minimal job impacts (the commentator is referred to the Socioeconomic Impacts Assessment contained in the Staff Report for PAR 1113).

1-19 Extensive discussion of air quality, water quality, hazard, and public service impacts were included in the Draft SEA prepared for this rule amendment. As noted in the response to comments #1-11 and #1-17, significant adverse impacts to energy and cultural resources, respectively, are not anticipated as a result of implementing PAR 1113.

1-20 As noted in the commentator's comment, the document cited and enclosed in a March 2, 1994 letter to the SCAQMD was previously submitted to the SCAQMD during the rule promulgation process for the 1996 amendments to Rule 1113. The document cited by the commentator was included in the Final SEA for PAR 1113 (SCAQMD No. 960626DWS) and responses to comments were prepared which are incorporated by reference. The commentator is, therefore, referred to the Final SEA for PAR 1113 (SCAQMD No. 960626DWS) with regard to specific responses to comments from the cited document. The Final SEA for PAR 1113 (SCAQMD No. 960626DWS) is available upon request from the SCAQMD's Public Information Center by calling (909)396-3600.

The recommended by the commentator presumes, incorrectly, that currently compliant products will be banned. Further, staff evaluated the coating product information sheets for a substantial number of both low VOC and currently compliant conventional coatings comprising a number of AIM coating categories. This evaluation identified coating characteristics such as VOC content, drying time, pot life, shelf life, durability characteristics, etc. The products evaluated are listed in the Tables in Appendix D, which are summarized in Table 4-2 in Chapter 4 of the Draft SEA.

1-21 This comment summarizes a number of the issues already identified in this comment letter. The following is a list of topics mentioned by the commentator and where to find the SCAQMD's response: adverse impacts to housing, #1-17; comparison of conventional coatings to future compliant coatings, #1-20 and Chapter 4; hazards associated with acetone, #1-20 and Chapter 4; greater use of coatings ,#1-15 and Chapter 4; energy and mineral resources, #1-11.

1-22 The analysis of potential adverse impacts that could be generated by implementing PAR 1113 is contained in Chapter 4 of this EA. The analysis of potential adverse impacts includes a project-specific analysis of impacts as well as an analysis of cumulative impacts when they are significant as required by the CEQA Guidelines.

COMMENT LETTER #1a

ELRAP - MILFORD, ET AL.

COMMENT LETTER #1a
ELRAP – Milford, et al.
December 1, 1998

1a This is a 1989 journal article that presents results of a modeling study of the responses of photochemical pollutant concentrations to VOC and NOx emissions reductions. This study is cited by the commentator to support his assertion that, "…VOC reductions can promote rather than inhibit ozone formation…" To the contrary, one of the conclusions of this document is, "ROG [VOC] controls are predicted to be most effective in those areas where high NOx levels are maintained and radical concentrations suppressed through midday." The document also states, however, "Moreover, the analysis indicates a strategy of controlling NOx emissions in combination with ROG [VOC] emissions would help reduce ozone, PAN, and inorganic nitrate simultaneously." As shown in Table 1c-1, this strategy of controlling both NOx and VOC emissions is consistent with SCAQMD's rule adoption strategy over the last decade as well as the 1997 AQMP ozone attainment strategy, which includes control measures expected to reduce NOx emissions 103 tons per day and VOC emissions 178 tons per day by 2006. The currently proposed amendments to Rule 1113 implement Phase II of the 1997 AQMP control measure #97CTS07 – Further Reductions from Architectural Coatings – Rule 1113, as well as 1994 AQMP control measure #94CTS07.

See also the responses to comments #1-3 and #1b-1.

COMMENT LETTER #1b

DUNN EDWARDS- KESSLER & ASSOCIATES, INC.

COMMENT LETTER #1b
Dunn Edwards – Kessler & Associates, Inc.
December 1, 1998

1b-1 The three statements attributed to the NOP/IS are accurate. With regard to reactivity, the SCAQMD does not dispute the fact that different VOCs have different reactivities. VOC control based on reactivity, however, is not currently a viable regulatory approach because of the limited amount of specific information available regarding actual or relative reactivities of the many VOCs used in coatings products.

AQMD staff disagrees with the commentator's implication that the SCAQMD's mass VOC emission control strategy may be counterproductive to ozone reduction. As discussed in Chapter 4 of the Draft SEA, the science of VOC reactivity is still in its early stages, with more comprehensive studies being conducted to refine VOC reactivity data. Until these studies are completed, the SCAQMD agrees with the EPA that it would not be prudent to implement a control strategy for VOC emissions based principally on VOC reactivity at this time. In its 1995 Report to Congress entitled "*Study of Volatile Organic Compound Emissions From Consumer and Commercial Products*," the EPA concluded, "To be most effective, ozone control strategies ideally should be based not only on mass VOC and NOx emissions but should consider the relative photochemical reactivity of individual species, the VOC-to-NOx ratios prevalent in specific airsheds, and other factors which could work together to minimize the formation of ozone with adverse impacts. Reactivity data on VOC, especially those compounds used to formulate consumer products and commercial products, is extremely limited. Better data, which can be obtained only at great expense, is needed if the EPA is to consider relative photochemical reactivity in any VOC control strategy. In the meantime, a practical approach is to act on the basis of mass VOC emissions." Thus, until more comprehensive VOC reactivity studies are completed that yield more refined speciation profiles for architectural coatings, the SCAQMD will continue to use a mass VOC control strategy. The SCAQMD welcomes any new scientific data that industry can provide to aid the SCAQMD in moving from a mass VOC emissions reduction strategy to a control strategy based on VOC reactivity.

In general, the relative contribution of a specific VOC under different atmospheric conditions needs to be better understood before data can be used for policy-making. Dr. William Carter recently received funding for a three million dollar ozone chamber, which will include studying VOC reactivity. The SCAQMD is also contributing funding to this ozone chamber. A working group will be established to guide reactivity research. It is expected that it will take 18 to 24 months to have the chamber running. The results of future studies may result in sufficient information to include reactivity-based control provisions in Rule 1113 and other coatings rules.

Reactivity-based regulations have also been discussed at Industry Working Group meetings (meeting #2, 10/7/98; meeting #3, 11/4/98; and meeting #4, 12/9/98). At Industry Working Group meeting #3, Dr. Carter explained that EPA does consider whether a VOC is reactive or non-reactive. EPA staff feels the high uncertainties of the MIR values would not make it a sound strategy until values are refined. EPA and private groups have established NARSTO to coordinate research related to reactivity policy.

While vehicle exhaust has been extensively studied for reactivity, it was only three years ago that glycols, esters, ketones, etc. were being studied. Uncertainty values vary for the best understood species by 30 percent for absolute reactivity and 20 percent for relative reactivity. For species that have not been studied extensively, uncertainty can be much greater. The value of the uncertainties is very difficult to isolate, but attempts to numerically identify uncertainties have been made.

Some specific problems (scientific issues) associated with reactivity-based regulations include:

- Assumptions in the current airshed models are too simplified, and do not represent airshed conditions in Basin.
- Studying the reactivity of halogenated compounds is frustrating because currently there is no way to simulate reactivity under current models and chamber conditions.
- Information on the reactivity of alcohol amines indicates that there is a high degree of uncertainty associated with the reactivity of these compounds and additional study is necessary.
- The reactivity of aromatics is still not well understood and current mechanism may not correlate well.
- Quantifying reactivity uncertainties is difficult – particularly for most compounds found in architectural coatings.
- The existing atmospheric chamber is not for studying reactivity in low-NOx environments.

NOx levels also effect the reactivity, absolute concentrations. Temperature and light intensity can also affect reactivity, but this relationship has not yet been studied. In urban areas, time and place of VOC and NOx emissions can also have effect; Absolute reactivity is scenario dependent and is more variable, whereas relative reactivity is less scenario dependent, and therefore less variable, and is the more important scale. The current scenarios represent the center of urban areas' NOx levels. The maximum incremental reactivity varies for each VOC species. Generally, under current scenarios, the VOC:NOx ratio is approximately 6.0, which is consistent with NOx levels in the downtown area of Los Angeles.

1b-2 The commentator is referred to the responses to comments #1b-1 and #1-3.

1b-3 SCAQMD staff has evaluated a seasonal regulation alternative that would allow architectural coatings with VOC content limits higher than those contained in PAR 1113 and rejected it as an infeasible alternative for the following reason. Based on discussions with industry, it has been suggested that this alternative may be infeasible because it may be difficult for coatings distributors to manage architectural coating stocks to ensure that only compliant coatings are sold during the high ozone season. As a result, this alternative is rejected as infeasible. See also the discussion in Chapter 5 of "Alternatives rejected as infeasible."

In addition to the issues identified by staff, one commentator (see comment letter #3) expressed concerns with a seasonal alternative because of the additional costs to coatings retailers of changing their stocks up to four times per year. Another concern raised by this commentator was the SCAQMD's ability to enforce a seasonal alternative.

C O M M E N T L E T T E R # 1c

E L R A P

COMMENT LETTER #1c
ELRAP (6/24/98)
December 1, 1998

1c-1 As noted by this comment, VOCs contribute to ozone formation. Refer to response to comment #1-3 for a discussion of the need to control VOC emissions.

1c-2 In this comment, the commentator provides general information about atmospheric concentrations of NOx and VOC. Although it is correct that most of the NOx in the atmosphere is from anthropogenic sources, the assertion that 60 percent of atmospheric VOCs comes from natural sources is not correct. According to the 1997 AQMP, man-made sources produce a substantial portion of the VOC emission inventory in the district (see also Table 1c-1). The commentator also states that in the relative absence of NOx controls, VOC emission controls "have proven effectively marginally at reducing peak ozone levels. In the last decade, the SCAQMD has implemented a number of NOx control rules, in addition to VOC control rules, that has produced declining actual and future projected emission inventories (see Table 1c-1). Although the district still has the worst ozone problem in the nation, ambient ozone concentrations have declined as a result of implementing vigorous NOx and VOC control strategies. For example, in the past few years, ozone air quality has been the cleanest on record in terms of maximum concentration and number of days exceeding the standards and episode levels. Maximum 1-hour average and 8-hour average ozone concentrations in 1997 (0.21 ppm and 0.14 ppm) were 168 percent and 169 percent of the federal 1-hour and 8-hour standards, but lower than the previous three years. Ozone concentrations exceeded the 1-hour state standard at all but one monitored locations in 1997. There was only one stage I episode in 1997, compared to the record low of seven days recorded in 1996.

1c-3 It is not clear what evidence the commentator bases his assertion that architectural coating emissions inventory data are inconsistent with monitoring data. Based on the air quality modeling and the emissions inventory contained in the AQMP, architectural coatings contribute a substantial amount of VOC emissions to the atmosphere, which, in turn, contribute to ozone formation. The 1997 AQMP emissions inventory data for architectural coatings are summarized in the following table.

Table 1c-1
1997 AQMP Baseline and Future Baseline Emissions Inventories
(tons per day)

AIM Coating VOC Baseline	**1987**	**1990**	**1993**	**1997**	**1999**	**2000**	**2002**	**2005**	**2008**	**2010**
Annual Avg.	55.3	55.9	56.3	57.8	58.9	59.4	61.1	63.4	65.7	67.3
Summer Avg.	65.2	65.9	66.4	68.2	69.5	70.1	72.0	74.7	77.5	79.4
Total VOC Emissions All Sources	1818.5	1648.3	1240.2	996.6	916.0	891.4	858.9	810.4	785.5	770.1
Total NOx Emissions	1302.6	1413	1194.3	1002.7	915.7	881.9	815.5	750.3	712.1	696.8

Source: 1997 AQMP, Appendix II

CARB's 1998 "Survey of Emissions from Solvent Use" is expected to be published in early 1999. Preliminary evaluation of the 1996 sales data indicates statewide AIM coating VOC emissions in 1996 of approximately 99 tons per day. Prorated by population to the Basin portion of SCAQMD, this results in 45 tons per day. These data do not include the clean-up and thinning solvents used as a part of the coating operation. The usage and emission values found in the preliminary CARB report are subject to changes based on the final 1998 CARB Survey Report.

1c-4 In this comment, the commentator implies that changes in coatings technologies are driven by market forces. The behavior of manufacturers in developing lower-VOC coatings and the public's acceptance of those products have occurred in conjunction with regulatory limits being placed on the products. There is no indication that the market would have moved at the same speed or to the same extent absent environmental regulations. The fact that EPA published a national AIM coatings rule in September 1998 to meet the obligations of Section 183(e) of the Clean Air Act, also indicates their position that regulations are necessary to drive the market forces. In addition, a study prepared for Inform Inc., a non-profit environmental research organization, entitled *Stirring Up Innovation: Environmental Improvements in Paints and Adhesives*, found that environmental regulation have been a strong driving force promoting innovation in the paint industry.

The commentator also indicates that coatings regulations are ineffective because they are based on two flawed assumptions. The first assumption is that reducing the VOC content of architectural coatings reduces total VOC emissions. The second assumption is that reducing VOC emissions from architectural coatings reduces peak ozone levels. With regard to each of these issues, the commentator is referred to the responses to comments #1-3 and #1b-1.

1c-5 The commentator is referred to the responses to comments #1-3 and #1b-1.

1c-6 The commentator is referred to the responses to comments #1-3 and #1b-1.

1c-7 This comment recommends that the SCAQMD consider innovative approaches to regulating architectural coatings. More detailed recommendations are given in comments 1c-8 through 1c-16. Please refer to the responses to these comments.

1c-8 The commentator is referred to the responses to comments #1-3 and #1b-1.

1c-9 The concept for a performance-based rule provision or project alternative was originally raised by members of the Industry Working Group (see "Industry Working Group Meetings" discussion in Chapter 2). Rather than establish lower VOC content requirements for specified categories of coatings, this alternative would establish emission standards based on emissions per area covered or coating durability.

This alternative was rejected as infeasible because the Industry Working Group could not reach consensus on how to establish performance standards as this depends on the type of application or coating technology. For example, alkyd-based coating formulations currently have a life cycle of five to seven years, while urethane-based coating formulations may have a life cycle of approximately 20 years. Agreement could not be reached concerning the appropriate standard for each type of coating technology. As a result, this alternative has been dropped from further consideration.

1c-10 The commentator is referred to the responses to comments #1c-9.

1c-11 With regard to architectural coatings inventories, the commentator is referred to the response to comment #1c-3. With regard to a reactivity based architectural coating regulation, the commentator is referred to the response to comment #1b-1.

1c-12 A low vapor pressure exemption was discussed during Industry Working Group meetings #2 (10/7/98) and #3 (11/4/98). One of the issues identified was the fact that for some VOCs, e.g., Texanol, current methods of measuring low vapor pressure are not readily usable because they are not very precise or reliable. Before a low vapor pressure exemption provision can be considered, other measuring or test methods need to be developed.

In addition, according to CARB, regulations are under consideration to include a low vapor pressure exemption, which was initially meant for high molecular weight resins, surfactants, detergents, and parafins/waxes commonly found in consumer products. For CARB's Consumer Products Rule, however, staff is proposing to delay implementation of the low vapor pressure exemption. Prior to implementation, CARB will evaluate how much of these new solvent mixtures that meet the LVP definition are found in consumer products and design a study to assess the fate of LVP solvents. The study is expected to occur no earlier than the end of 1999.

The low vapor pressure exemption under consideration by CARB is for consumer products where the organic compounds are washed away. These typically do not evaporate into the air. For architectural coatings, the intent of solvents is to evaporate and go into the air. The approved test method for measuring VOC (Method 24) yields low vapor pressure compounds as VOCs, therefore, they should not be considered exempt in architectural coatings regulations. For this reason, a low vapor pressure exemption is not considered to be a feasible alternative.

1c-13 This comment is a recommendation to include a product line averaging provision to regulate architectural coatings. A product line averaging provision is included in PAR 1113.

1c-14 The seasonal deregulation alternative was discussed during Industry Working Group meeting #1 (9/3/98). At this meeting, members indicated that contractors are often involved in long-term projects and as a result, coatings must be available year round. Further, industrial maintenance coating contractors are often involved with very specialized projects, where changes to coatings specifications are not possible. For these types of projects, specific coatings must also be available year round.

Based on discussions with industry, it may be difficult for coatings distributors to manage architectural coating stocks to ensure that only compliant coatings are sold during the high ozone season. As a result, this alternative is rejected as infeasible. See also the discussion in Chapter 5 of "Alternatives Rejected as Infeasible."

In addition to the above issues, one commentator (see comment letter #3) expressed concerns with a seasonal alternative because of the additional costs to coatings retailers of changing their stocks up to four times per year. Another concern raised by this commentator was the SCAQMD's ability to enforce a seasonal alternative.

Based upon all of the above reasons, a seasonal deregulation alternative is currently considered to be infeasible.

1c-15 A similar concept to regional deregulation (geographic shift control strategy) was considered as a project alternative to the 1997 AQMP. For this AQMP alternative, air quality modeling was performed to determine its viability. The results of the analysis indicated that the geographical shift alternative was difficult to model because the model is dependent on meteorological conditions. For example, depending on the meteorological conditions used, it was difficult to determine whether or not an exceedance in one source receptor area (SRA) was due to the emissions sources in that SRA or the result of wind conditions in which emissions from an upwind SRA were transported to a second SRA, causing a violation in the second SRA. For this reason a regional deregulation alternative was rejected as infeasible. See also the discussion "Alternatives Rejected as Infeasible" in Chapter 5.

1c-16 The SCAQMD already has a public outreach program through the SCAQMD's Public Advisor's Office. The Public Advisor's Office prepares brochures that include information on additional steps the public can take to reduce air pollution, see for example "25 Ways You Can Clean the Air" or "What You Need to Know About Water-based Cleaners." With regard to coatings, the SCAQMD currently has available a brochure called "The Painter's Guide." In addition to written material, staff in the Public Advisor's Office is available to give presentations to local community groups and organizations on air pollution and reducing emissions. Staff also attends special events such as ride share fairs – setting up booths, for example – to distribute information about air pollution and reducing emissions. In spite of these activities, the SCAQMD must continue adopting and implementing NOx and VOC control rules because the SCAQMD cannot take any credit for potential emissions from educational or voluntary programs.

1c-17 In this comment, the commentator recommends that serious consideration be given to some of the alternative regulatory approaches previously described in this comment letter. The alternatives recommend for consideration include the following: exemption for low volatile compounds (see response to comment #1c-12); seasonal deregulation (see response to comment #1c-14); regional deregulation (see response to comment #1c-15); reactivity based regulation (see response to comment #1b-1); performance based standards (see response to comment #1c-9); product line averaging (see response to comment #1c-13); and public advisories/voluntary action (see response to comment #1c-16).

With the exception of the proposal for public advisories/voluntary action, all of these alternatives have been discussed in one or more Industry Working Group meetings. As noted in some of the above responses, a number of issues were identified in the Industry Working Group meetings for several of the alternatives, e.g., the low vapor pressure exemption alternative, seasonal deregulation, regional deregulation, and reactivity. These issues and other issues identified by staff renders most of the recommended alternatives as infeasible.

C O M M E N T L E T T E R # 1d

E L R A P

COMMENT LETTER #1d
ELRAP (7/26/96)
December 1, 1998

1d It is unclear why comment letter #1d was included in the packet of comments on the currently proposed amendments to Rule 1113 as it was previously submitted to the SCAQMD in response to a June 14, 1996, Notice of Preparation of a Draft EA for PAR 1113 (SCAQMD No. 960613DWS). The amendments under consideration at that time reinstated a small container exemption into Rule 1113.

In this comment letter, the commentator summarizes a timeline of events associated with the process of reinstating the small container exemption into Rule 1113. The bulk of the letter, however, explains why the commentator disagrees with the conclusion in the Draft SEA that reinstating the small container exemption will result in a significant adverse air quality impact.

As explained in the response to comments, incorporated herein by reference, staff disagreed with the commentator's assertion that reinstating the small container exemption would result in a net air quality benefit. Based upon the analysis contained in the 1996 Final EA (SCAQMD No. 960613DWS), it was concluded that reinstating the small container exemption would result in a VOC emission increase of 0.55 tons per day (1,100 pounds per day), which exceeds the SCAQMD's VOC significance threshold of 55 pounds per day. For additional information, the commentator is referred to the 1996 Final EA for PAR 1113 (SCAQMD No. 960613DWS).

C O M M E N T L E T T E R # 1e

E L R A P

COMMENT LETTER #1e
ELRAP (10/6/97)
December 1, 1998

1e With regard to the letter to the editor and the associated *Los Angeles Times* article, the commentator is referred to the response to comment #1-17.

COMMENT LETTER #2

LAW OFFICES OF SMILAND & KHACHIGIAN

COMMENT LETTER #2
Law Offices of Smiland & Khachigian
December 1, 1998

2-1 It is unclear what the commentator is referring to when he states that, "…the NOP admits (at 1-8) that the 'project' for which the South Coast AQMP (sic) proposes to prepare a Draft SEA has not been defined,…" The NOP includes a summary of PAR 1113 beginning on page 1-5 of the Initial Study. Further, a copy of PAR 1113 is included in the NOP/IS as Appendix A.

The SCAQMD is aware of its responsibilities pursuant to CEQA to analyze project-specific impacts and cumulative impacts when they are significant (CEQA Guidelines §§15126 and 15130, respectively). The topics identified on pages 2-6 and 2-7 are analyzed in detail in Chapter 4 of the Draft SEA. See also responses to comments #1-8, #1-12, #1-21, #1c-5, and #1c-6.

2-2 The commentator is referred to the responses to comment #2-1.

2-3 The statement in the NOP that the project was previously considered in the 1997 AQMP and in a 1990 EA is for background information. The SCAQMD is not relying on either of these two documents to serve as the CEQA document for the currently proposed amendments to Rule 1113. The Draft SEA prepared for PAR 1113 analyzes potential adverse impacts specifically from the current PAR 1113. The analysis is based upon the most currently available data and information.

2-4 The commentator is referred to responses to comments #1-3 and #1b-1.

2-5 According to the 1997 AQMP, Appendix III, mobile sources, both on-road and off-road, generate over 60 percent of the total 1993 VOC emissions inventory. The mobile source inventory is provided by CARB and the SCAQMD is required by law to use this inventory.

2-6 The commentator is referred to the responses to comments #1-3, 1a, and #1b-1.

2-7 The commentator is referred to the responses to comments #1-3and #1b-1.

2-8 An additional opportunity to comment on the environmental analysis for PAR 1113 is afforded the commentator during the comment period for the Draft SEA.

COMMENT LETTER #3

SHERWIN WILLIAMS

COMMENT LETTER #3
Sherwin Williams
November 25, 1998

3-1 It is assumed that by regulatory options the commentator is referring to potential project alternatives. Potential alternatives recommended by the Industry Working Group for consideration include the following: exemption for low volatile compounds (see response to comment #1c-12); seasonal deregulation (see response to comment #1c-14); regional deregulation (see response to comment #1c-15); reactivity based regulation (see response to comment #1b-1); performance based standards (see response to comment #1c-9); product line averaging (see response to comment #1c-13); and public advisories/voluntary action (see response to comment #1c-16). The commentator is also referred to Chapter 5 of the Draft SEA for a description and analysis of the currently proposed project alternatives. If this comment refers to alternative regulatory coating categories, the commentator is referred to the response to comment #3-6.

3-2 Although it is true that the SCAQMD has contracted a study with NTS, the proposed amendments do not rely on this study for the development of PAR. Staff has conducted an exhaustive and comprehensive analysis of currently available low VOC coatings that forms the primary basis for PAR 1113. This analysis evaluated hundreds of coatings from approximately 12 manufacturers and considered the following coating characteristics: VOC content, percent solids by volume, coverage, adhesion, durability, pot life, shelf life, gloss, and drying time. These issues are discussed in Chapter 4 of the Draft SEA. To the extent information is available from the NTS study, it will be incorporated into the analysis.

3-3 CARB has been collecting sales data which is expected to provide more precise information on the architectural coating emission inventory in the district. Though the CARB study is important, it does not provide information relevant to establishing specific VOC content limits.

3-4 The SCAQMD disagrees with the commentator's assertion that, "…developing the NOP and draft SEA prior to such a decision on the final proposal…is contrary to sound governmental policy." Under CEQA, the CEQA process must be completed prior to a final decision on a project.

3-5 The NOP/IS for PAR 1113 was circulated for a 30-day public review and comment period.

3-6 Compliant interior and exterior coatings are currently available for clear and semi-transparent stains. Opaque (semi-solid) stains are typically manufactured for exterior use only. However, compliant stains are available for all three types of stains. For clear and semi-transparent stains, 9 percent and 15 percent respectively, are recommended for both interior and exterior (dual) usage. Different interior and exterior VOC limits for the same category substantially impact the enforceability of the rule, especially in cases where the same formulation is recommended for dual uses.

Staff has found compliant coatings for each use (a-g). . Staff has analyzed the use of the lower-VOC technologies for a variety of uses. The low- and zero-VOC industrial maintenance coatings are recommended for a variety of industrial uses, including but not limited to refineries, chemical facilities, food processing, pulp and paper manufacturing, bridge, pipeline, and wastewater treatment facilities.

Staff has found both single-component and two-component low- and zero-VOC coatings for a variety of uses. Therefore, staff believes that creating separate categories for single- and multi-component coatings is unnecessary. Rule 1107 – Metal Coatings, also has several

other requirements, such as recordkeeping. Facilities under Rule 1107 also fall under New Source Review requirements and, therefore, have a daily facility cap of emissions and coating usage. Rule 1113 has neither requirement.

Staff has found compliant individual coatings, as well as complete systems that comply with the proposed limits. Please review the draft staff report for an extensive discussion of industrial maintenance coatings and systems.

Staff has found compliant primers, sealers, and undercoaters for a variety of uses, including interior and exterior uses. The CARB survey indicates that almost 1/3 of all primers, sealers, and undercoaters are for dual (both interior and exterior) uses. Different interior and exterior VOC limits for the same category substantially impact the enforceability of the rule, especially in cases where the same formulation is recommended for dual uses.

Nonflat coatings, as defined in the proposed amended rule are not floor or rust preventative coatings. The proposed amended rule has two new categories for floor and rust preventative coatings. Staff has found compliant nonflats for a variety of uses, including interior and exterior uses. The CARB survey indicates that over 40 percent of all nonflats are recommended for dual (both interior and exterior) uses. Different interior and exterior VOC limits for the same category substantially impact the enforceability of the rule, especially in cases where the same formulation is recommended for dual uses.

The PAR 1113 includes an averaging provision which can be used by the coating manufacturers to continue marketing non-compliant coatings, and allow an end-user to take a similar approach on a systems basis.

3-7 The District has proposed an additional category called Rust Preventative Coatings in PAR1113.

3-8 The commentator is referred to the responses to comments #1-3 and #1b-1.

3-9 This comment is a recommendation to include a product line averaging provision to regulate architectural coatings. A product line averaging provision is included in PAR 1113.

3-10 SCAQMD staff has evaluated a seasonal regulation alternative that would allow architectural coatings with VOC content limits higher than those contained in PAR 1113 and rejected it as an infeasible alternative for the following reason. Based on discussions with industry, it has been suggested that this alternative may be infeasible because it may be difficult for coatings distributors to manage architectural coating stocks to ensure that only compliant coatings are sold during the high ozone season. As a result, this alternative is rejected as infeasible. See also the discussion in Chapter 5 of "Alternatives rejected as infeasible."

In addition to the issues identified by staff, this commentator expressed concerns with a seasonal alternative because of the additional costs to coatings retailers of changing their stocks up to four times per year. Another concern raised by the commentator was the SCAQMD's ability to enforce a seasonal alternative.

3-11 The primary focus of the proposed project alternatives is VOC content limits and alternative compliance dates. The commentator is referred to Chapter 5 of the Draft SEA for descriptions and analyses of the proposed project alternatives. With regard to the commentator's recommendation to units of grams of VOC per liter rather than the current "less water" VOC calculation method, please refer to the response to comment #4-14.

3-12 The SCAQMD disagrees with the commentator's assertion that noise impacts will increase with the use of future compliant low VOC coatings, especially those applications where coatings are applied by brush or roller. Coating application systems that rely on pressure and a power source have very low noise levels associated with them. In any event, as with any new technology, a "learning curve" may be involved, whereby, once trained, workers should be able to apply future compliant coatings in approximately the same amount of time as currently available coatings.

Regarding surface preparation, staff evaluated hundreds of conventional and low VOC coatings (see Tables in Appendix D and the summary tables in Chapter 4 of the Draft SEA). Where information or data are provided, the information indicated that low VOC coatings do not require substantially different surface preparation, including sandblasting, than conventional coatings. As a result, the time necessary to prepare a surface for coating is approximately equivalent for conventional and low VOC coatings. For these reasons, no significant adverse noise impacts are anticipated from implementing PAR 1113.

3-13 It should be noted that sandblasting is a surface preparation technique that is and has been widely used as a means of surface preparation. Specifically with regard to surface preparation, staff evaluated this characteristic as part of the evaluation of coating product data sheets mentioned in preceding responses (see also the tables in Appendix D and the summary table in Chapter 4 of the Draft SEA). Where information or data are provided, the information indicated that low VOC coatings do not require substantially different surface preparation than conventional coatings. As a result, it is not anticipated that the use of sandblasting as a method of surface preparation will increase substantially as a result of implementing PAR 1113. Consequently, no significant adverse hazard impacts from sandblasting are expected.

3-14 Wastes from sandblasting are not anticipated to increase substantially for the same reason identified in the response to comment #3-13. Consequently, no significant adverse solid/hazardous waste impacts are expected as a result of implementing PAR 1113.

3-15 As mentioned in response to comment #3-2, one of the characteristics that staff evaluated regarding currently available low VOC coatings is pot life. The analysis of potential environmental impacts in Chapter 4 includes an analysis of potential impacts related to pot life of multi-component low VOC coatings.

3-16 Contractors building new housing will be required to use compliant coatings on and after the proposed compliance dates listed in the Table of Standards in Rule 1113. Based upon information on currently available compliant products (see the discussion in Chapter 4), performance characteristics of existing and reformulated products should be sufficient to meet the weathering impacts and other performance characteristics on new construction. In addition, PAR 1113 has been modified, such that the first compliance date milestone has been moved from July 1, 2001, to January 1, 2002. This delay will allow coatings manufacturers additional time to formulate their products. The commentator is also referred to response to comment #1-7.

3-17 The commentator is correct that there is no regulatory requirement to eliminate from AIM coatings the specific solvents mentioned. In surveying conventional and low VOC AIM coatings (see the tables in Appendix D), however, staff noted a trend of coating formulators to move away from formulating low VOC coatings with hazardous materials when possible. Further, although mineral spirits are not carcinogenic or teratogenic, they are highly flammable. Generally, replacement solvents would be less flammable. Regarding potential hazard impacts associated with architectural coatings formulated with acetone, the commentator is referred to the response to comment #1-12. See also Chapter 4 of the Draft

EA for a more complete discussion of hazard impacts associated with both conventional and replacement solvents.

COMMENT LETTER #4

NATIONAL PAINT & COATINGS ASSOCIATION

COMMENT LETTER #4
National Paint & Coatings Association
December 1, 1998

4-1 Although it is true that the SCAQMD has contracted a study with NTS, the proposed amendments do not rely on this study for the development of PAR. Staff has conducted an exhaustive and comprehensive analysis of currently available low VOC coatings that forms the primary basis for PAR 1113. This analysis evaluated hundreds of coatings from approximately 12 manufacturers and considered the following coating characteristics: VOC content, percent solids by volume, coverage, adhesion, durability, pot life, shelf life, gloss, and drying time. To the extent information is available from the NTS study, it will be incorporated into the analysis.

4-2 PAR 1113 has been rescheduled to be considered by the SCAQMD Governing Board at the May 14, 1999 Public Hearing.

4-3 The NTS study does include actual exposure tests that will be conducted in three locations within the Basin, including El Segundo, Saugus, and Fullerton. Staff will analyze the results of the actual exposure studies and utilize these as a part of technical assessments for future limits.

4-4 The proposed amendments do rely on low VOC coatings technology. This is typically the way the SCAQMD's rule promulgation process works, i.e., develop new rules or amend existing rules based upon on low emission technologies that are currently available. SCAQMD staff's exhaustive and comprehensive analysis of currently available low VOC coatings forms the basis for PAR 1113. This analysis evaluated hundreds of coatings from approximately 12 manufacturers and considered the following coating characteristics: VOC content, percent solids by volume, coverage, adhesion, durability, pot life, shelf life, gloss, and drying time. These issues are discussed in Chapter 4 of the Draft SEA. Further, PAR 1113 has been modified, such that the first compliance date milestone has been moved from July 1, 2001, to January 1, 2002. This delay will allow coatings manufacturers additional time to formulate their products.

In addition to staff research, the SCAQMD established an Industry Working Group (see the discussion in Chapter 2) that has met five times since September 3, 1998. These Industry Working Group meetings have addressed many of the issues raised in the comments on the NOP/IS and has resulted in modifications to PAR as identified in the response to comment #4-5. Consequently, the Rule 1113 amendment process can be characterized as, "…a thorough, open minded, and objective evaluation of existing and reasonably foreseeable coatings technologies in setting future VOC limits."

4-5 Staff has analyzed the national AIM rule's categories and definitions, as well as the VOC limits. Staff believes that adding additional categories into the Table of Standards with the default 250 g/l limit will add to confusion, instead of simplifying the rule. For example, the national AIM rule has separate categories for interior and exterior nonflats, but has the same VOC limit. This does not add any simplicity to the rule, just redundancy. The current Rule 1113 – Architectural Coatings currently contains an exemption for coatings sold in containers having a capacity of one quart or less (Rule 1113(g)(1)(A)). Staff has created two new coating categories: floor coatings and rust preventative coatings. However, the current and future proposed VOC limits are different than those found in the national AIM rule. Staff has adopted the national AIM rule definitions and provisions for some categories, where appropriate.

4-6 Regarding a low vapor pressure exemption, the commentator is referred to the response to comment #1c-12.

4-7 Regarding performance based standards, the commentator is referred to the response to comment #1c-9.

4-8 Regarding a reactivity based alternative, the commentator is referred to the responses to comments #1-3 and #1b-1.

4-9 This comment is a recommendation to include a product line averaging provision to regulate architectural coatings. A product line averaging provision is included in PAR 1113.

4-10 Regarding regional deregulation, the commentator is referred to the response to comment #1c-15.

4-11 Regarding a seasonal regulatory approach, the commentator is referred to the response to comment #1c-14.

4-12 With regard to the comments that there is no reasonably foreseeable technology that would achieve the limit and the limit might be appropriate for some applications and not others, the commentator is referred to the response to comment #4-5. With regard to costs, the commentator is referred to the Socioeconomic Impact Assessment in the Staff Report for PAR 1113. Finally, with regard to holding off further drafting of the proposed revisions to Rule 1113, the Public Hearing for PAR 1113 has been delayed from February 12, 1999, to May 14, 1999. This delay has provided additional time for consideration of PAR 1113 by the Industry Working Group and staff.

4-13 The commentator is referred to the response to comment #4-5.

4-14 The SCAQMD utilizes the USEPA approved test method for VOC content of architectural coatings. An alternative test method for testing VOC content of architectural coatings (especially low- VOC coatings) has been developed, and is currently undergoing validation testing. This alternative test method, also known as the direct injection method, relies on a GC/MS analysis, and reports the results in percent VOC. The SCAQMD supports the work on the direct injection method, and looks forward to adoption by the USEPA.

4-15 A non-compliant coating fee is essentially a pay-to-pollute proposal. The SCAQMD has resisted such proposals in the past because they do nothing to bring the district into compliance with state and federal standards, and may actually hinder attainment efforts. Further, The US EPA has indicated in the past that it will not approve pay to pollute proposals unless there is a specified emission reduction proposal associated with the proposal. As a result, a pay-to-pollute will not be considered further.

4-16 The commentator is referred to the response to comment #1-12 regarding potential hazard impacts associated with architectural coatings formulated with acetone. With regard to plural coating systems, the commentator is referred to the response to comment #5-5. See also Chapter 4 of the Draft EA.

4-17 The analysis of environmental impacts in Chapter 4 of the Draft SEA includes an analysis of potential impacts to landfills from the use of two-coating systems The commentator is, therefore, referred to Chapter 4.

COMMENT LETTER #5

PPG INDUSTRIES, INC.

COMMENT LETTER #5
PPG Industries, Inc.
December 1, 1998

5-1 The commentator is referred to responses to comments #4-1 through #4-17.

5-2 Regarding the rule amendment schedule, the commentator is referred to the responses to comments #3-2, #4-1 and #4-2.

5-3 The proposed VOC limit of 250 g/l for stains is based on a variety of 100 percent acrylic technologies that have been available in the marketplace for over five years. Numerous local, national, and international manufacturers of stains have this compliant technology available. Some of the manufacturers claim excellent performance for their 100 percent acrylic products. The commentator is referring to the Resydrol 586 resin technology, which is a hybrid resin based on an alkyd core and acrylic exterior. Staff has submitted a requests for PPGAF's analysis and laboratory studies on numerous occasions pertaining to their evaluation of the Vianova Resin's Resydrol technology. To date, PPGAF's staff, specifically Robert Gross, has not forwarded their testing information. In contrast, Vianova Resin has forwarded information showing performance of their stains based on the Resydrol 586 resin. Basically, this technology has been used in Europe for over ten years, and Vianova has over four years of actual exposure data from the US, showing good performance, without any flaking, cracking, or peeling. Therefore, if PPGAF has actual studies that show different performance, the SCAQMD again requests these studies. In summary, numerous types of technologies are currently available, and commercially available stains that comply with the proposed 250 g/l VOC limit, seem to perform just as well or even better than some of the alkyd technology. Therefore, staff has not received any empirical studies that show the need for more frequent recoating using the new, lower-VOC technologies.

5-4 Staff has shared the technologies for other coating categories in the working group meetings, as well as in the Draft Staff Report. If the commentator wishes to obtain additional information, or would like staff to facilitate meetings with suppliers of compliant technology, the commentator is encouraged to contact staff to set up a meeting.

5-5 The proposed definition for industrial maintenance coatings is the definition originally adopted in 1990, but invalidated in a court decision. The existing definition lists each resin type individually, with the same VOC limit for each resin type listed. The proposed definition clarifies the definition for this coating category by adding specific performance requirements necessary for industrial maintenance coatings, and removes the individual resins utilized for formulating coatings. For this category, compliant waterborne and high-solids coatings are available for all uses. Staff recognizes that a portion of compliant coatings rely on two-component formulations that have limited pot lives. The use of plural spray equipment mitigates issues relating to two-component coatings, whereas use of airless spray technology mitigates application issues relating to high-solids coatings. All of the safety issues have been extensively analyzed in the Draft SEA. In summary, staff has conducted a technology assessment and found commercially available technologies for a variety of industrial uses. However, if a manufacturer does have a specialty industrial maintenance coatings that cannot be formulated below the proposed compliance limits, that manufacturer can use the Averaging Provision option to continue selling the non-compliant coating.

5-6 The definition of stains has not been modified as part of PAR 1113. Based upon staff's research on available low VOC coatings, including stains, the 250 gram per liter limit is a viable limit. The commentator is also referred to the response to comment #5-4.

5-7 Staff would like to thank the commentator for the comments provided. In response, staff has re-addressed the proposed VOC limits and compliance dates, where appropriate.

COMMENT LETTER #6

BENJAMIN MOORE & CO.

COMMENT LETTER #6
Benjamin Moore & Co.
November 25, 1998

6-1 The commentator is referred to the response to comment #4-5.

6-2 The commentator is referred to the response to comment #4-14.

6-3 With regard to a reactivity-based alternative, the commentator is referred to the responses to comments #1b-1 and #1-3. With regard to an exemption for low volatile compounds, the commentator is referred to the response to comment #1c-12.

6-4 A product line averaging provision is included in PAR 1113. The commentator is referred to Chapter 2 – Project Description and PAR 1113 (Appendix A).

6-5 Staff assumes this comment refers to requiring a non-compliant coating fee. The commentator is referred to the response to comment #4-15.

6-6 With regard to the various studies, the rule amendment schedule and VOC content limits, the commentator is referred to the responses to comments #3-2, 4-1, and 4-2.

6-7 The SCAQMD would like to thank the commentator for proposing alternative future limits. However, staff has found compliant coatings for all affected categories, with performance claims equivalent to their high-solvent counterparts. Furthermore, the proposed alternative limits do not achieve the emission reductions necessary to implement the applicable AQMP control measure.

6-8 First and foremost, the proposed amended rule does not require completely solvent-free coatings. However, staff has gathered information on numerous zero-VOC and low-VOC resin technologies that do not have blocking or stain-blocking problems. Staff has also found numerous coatings for all affected categories, with performance claims equal to their higher-solvent counterparts. The lower VOC products do require more stringent surface preparation for proper application. Waterborne coatings typically dry much faster than their solvent-based counterparts, except during high humidity and low temperature conditions. However, such high humidity and low temperature conditions do not appear in most of the Basin during majority of the year.

6-9 The analysis of environmental impacts in Chapter 4 of the Draft SEA includes an analysis of potential impacts to landfills from the use of two-coating systems The commentator is referred to the response to comment #1-12 regarding potential hazard impacts associated with architectural coatings. See also Chapter 4 of the Draft EA.

COMMENT LETTER #7

BONA

COMMENT LETTER #7
Bona
December 1, 1998

7-1 It is likely that the issues identified on pages 2-6 and 2-7 of the IS do not apply to hardwood floors. These issues have been raised as part of past rule making efforts on Rule 1113 and, in fact, have been raised in response to the currently proposed amendments to Rule 1113 (see, for example, comment letter #1). These issues are addressed in Chapter 4 of the Draft SEA.

It is acknowledged, however, that commercially available water-based floor finishes have durability characteristics equal to or surpassing that of traditional solvent-based products.

7-2 Wood varnishes are not included in the NTS study because their VOC content limit is not affected by the currently proposed amendments. The results of the NTS study will be available to the public when it is completed.

7-3 As noted in response to comment #7-2, the VOC content limit of wood varnishes is not affected by the currently proposed amendments. As a result, prices for wood varnishes are not expected to be affected by PAR 1113.

7-4 As noted in response to comment #7-2, the VOC content limit of wood varnishes is not affected by the currently proposed amendments.

7-5 PAR 1113 has been modified to delay the compliance date for stains from July 1, 2001, to January 1, 2002 to allow additional time to develop compliant formulations. The commentator is referred to the responses to comments #7-6 and #7-7.

7-6 Waterborne coatings typically dry much faster than their solvent-based counterparts, except during high humidity conditions and low temperatures. However, such high humidity and low temperature conditions do not appear in most of the basin during majority of the year.

7-7 Viscosity of a coating is affected by temperature and humidity, recognizing that viscosity of a coating can increase with decreasing temperatures and increasing humidity levels. Staff has found compliant stains that have a similar viscosity to the higher VOC stains. However, such high humidity and low temperature conditions do not appear in most of the Basin during the majority of the year.

7-8 Staff agrees that some manufacturers may be circumventing the more stringent VOC limits by categorizing their coatings under the quick-dry categories. The quick-dry primers, sealers, and undercoaters, however, will be subsumed into the general primer, sealer, and undercoater category.

7-9 Potential alternatives recommended by the Industry Working Group for consideration include the following: exemption for low volatile compounds (see response to comment #1c-12); seasonal deregulation (see response to comment #1c-14); regional deregulation (see response to comment #1c-15); reactivity based regulation (see response to comment #1b-1); performance based standards (see response to comment #1c-9); product line averaging (see response to comment #1c-13); and public advisories/voluntary action (see response to comment #1c-16). The commentator is also referred to Chapter 5 of the Draft SEA for a description and analysis of the currently proposed project alternatives.

COMMENT LETTER #8

DU PONT

COMMENT LETTER #8
Du Pont
December 11, 1998

8-1 The proposed amendments do rely on low VOC coatings technology. This is typically the way the SCAQMD's rule promulgation process works, i.e., develop new rules or amend existing rules based upon on low emission technologies that are currently available. For PAR 1113 staff conducted an exhaustive and comprehensive analysis of currently available low VOC coatings that forms the primary basis for PAR 1113. This analysis evaluated hundreds of coatings from approximately 12 manufacturers and considered the following coating characteristics: VOC content, percent solids by volume, coverage, adhesion, durability, pot life, shelf life, gloss, and drying time. These issues are discussed in Chapter 4 of the Draft SEA. Further, PAR 1113 has been modified, such that the first compliance date milestone has been moved from July 1, 2001, to January 1, 2002. This delay will allow coatings manufacturers additional time to formulate 50 gram per liter products.

8-2 Regarding performance issues, the commentator is referred to the response to comment #8-1. These issues are discussed in Chapter 4 of the Draft SEA. Finally, even if it were true that lowering the VOC content level of coatings from 420 grams per liter to 50 grams per liter required more frequent applications, an individual could apply the 50 gram per liter coating an additional seven times and still obtain a slight air quality benefit. Based on staff research of available compliant coatings, no coatings were identified with such poor performance characteristics.

8-3 Staff has found commercially available coatings that comply with the VOC content limits for all affected coating categories, especially the January 1, 2002 VOC content limits. Most of these have been available and used for more than five years by a variety of local users. However, the SCAQMD appreciates the need for end-users to evaluate the performance of these coatings. Therefore, the proposed limits for industrial maintenance coatings have been raised for the industrial maintenance and nonflat coatings, and the compliance dates have been extended. Regarding use of these coatings, end-users can use non-compliant coatings for an additional three years after the future effective dates are implemented. Please refer to subsection 1113(c)(4) for the specific language of the sell-through provision. The compliance dates listed in the Table of Standards are specifically for manufacture, and not use.

8-4 With regard to analysis of currently available coatings see response to comment #8-1.

8-5 Staff has found numerous single-component and two-component, zero-VOC industrial maintenance coatings, with pot lives of up to three hours (see the tables in Appendix D). These can be brushed, rolled or sprayed using conventional coating gun technologies. However, staff recognizes that some fast-cure zero-VOC technologies require using plural spray technology. However, the increased cost of the application equipment is more than offset by the faster dry time and quicker turnaround time associated with the fast cure coatings. The final compliance date for the 100 g/l VOC limit for industrial maintenance coatings has been extended from July 1, 2001, to January 1, 2005, to provide adequate time for contractor training with the increased use of two-component coatings.

8-6 It is assumed that this comment's reference to new application methods refers to the potential increased usage of two-component coating systems, which require plural spray gun equipment. It should be noted that two-component coating systems are already used in certain applications, e.g., industrial maintenance applications. Although such equipment requires training to achieve desired coating characteristics, staff has not identified any

hazards associated with plural spray gun equipment that are greater or more severe than currently used coating spray equipment.

8-7 The commentator is referred to the response to comment #8-1. Although the commentator doesn't mention in this comment any specific issues that may arise, Chapter 4 of the Draft SEA includes analysis of a wide range of potential impacts that may occur as a result of the proposed amendments. See also response to comment #4-2.

8-8 Based upon input from the Industry Working Group, the interim compliance date has been moved from July 1, 2001, to January 1, 2002. The final compliance date remains January 1, 2005, based on input from the coatings industry regarding how long it takes to formulate new coatings. The 100 gram per liter interim limit for applicable has not been modified due to the delayed interim compliance date and the available of compliant coatings currently on the market.

8-9 With regard to the NTS study, the commentator is referred to the response to comment #3-2. With regard to real world testing the commentator is referred to the response to comment #4-3. Finally, the NTS study will be made available to coatings manufacturers, as well as the public in general.

8-10 Rule 1113 already contains a provision, (c)(4), that allows the sale of coatings manufactured before the final compliance date for three years after the final compliance date.

8-11 CARB has been collecting sales data which is expected to provide more precise information on the architectural coating emission inventory in the district. Though the CARB study is important, it does not provide information relevant to establishing specific VOC content limits.

8-12 Staff has analyzed the use of the lower-VOC coating technologies for a variety of uses. The low- and zero-VOC industrial maintenance coatings are recommended for a variety of industrial uses, including but not limited to refineries, chemical facilities, food processing, pulp and paper manufacturing, bridge, pipeline, and wastewater treatment facilities.

8-13 The commentator is referred to the response to comment #8-8.

8-14 Staff is cognizant of the issues involved with use of low- and zero-VOC coatings. Extensive evaluation of hundreds of low VOC and conventional coatings indicates that low VOC coatings have comparable durability characteristics, such as corrosion resistance for example, compared to conventional coatings (see the tables in Appendix D and applicable summary table in Chapter 4). Consequently, the chances of corrosion failures are not significantly greater than with conventional coatings. With regard to economic impacts associated with PAR 1113, the commentator is referred to Socioeconomic and Cost Effectiveness Assessment.

8-15 Staff has conducted an extensive technology assessment for the PAR 1113, as well as analyzed the cost-effectiveness of proposal. The current version of PAR, in particular modifications to the Table of Standards, reflects this technology assessment.

8-16 The SCAQMD cannot provide any guidance to industry pertaining to documentation on pursuit of other avenues.

COMMENT LETTER #9

CARBOLINE COMPANY

COMMENT LETTER #9
Carboline Company
November 30, 1998

9-1 PAR 1113 contains a specific category for high temperature coatings, with a proposed limit of 550 g/l, effective January 1, 2002. Staff has found several compliant industrial maintenance coatings that have substantial service lives. These include, but are not limited to, Ameron's Polysiloxane coatings and Madison Chemical's two-component polyurethane coatings. Therefore, staff believes that a category for extreme performance is not required. For a more extensive discussion of industrial maintenance coatings, please review the industrial maintenance section in the draft staff report. Finally, staff is not aware of any nuclear facilities within the district, needing this specialty coating category.

9-2 The compliance date for the 100 g/l VOC content limit for industrial maintenance coatings has been extended from July 1, 2001, to January 1, 2005, to provide adequate time for contractor training with the increased use of two-component coatings. The interim compliance date for the VOC content limit of 250 g/l is proposed for January 1, 2002. Staff has analyzed the use of the lower-VOC technologies for a variety of uses. The low- and zero-VOC industrial maintenance coatings are recommended for a variety of industrial uses, including but not limited to refineries, chemical facilities, food processing, pulp and paper manufacturing, bridge, pipeline, and wastewater treatment facilities

9-3 Staff has found numerous single-component and two-component, zero-VOC industrial maintenance coatings, with pot lives of up to three hours. These can be brushed, rolled or sprayed using conventional gun technologies. However, staff recognizes that some fast-cure zero-VOC technology require the use of plural spray technology. However, the increased cost of the application equipment is more than offset by the faster dry time and quicker turnaround time associated with the fast cure coating.

9-4 The commentator is referred to the responses to comments #9-2 and #9-3.

COMMENT LETTER #10

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

COMMENT LETTER #10
Southern California Association of Governments
November 17, 1998

10-1 The SCAQMD agrees that the proposed project is not regionally significant per the Areawide Clearinghouse criteria. The Draft SEA will be sent to SCAG for further review and comment.

12/9/98 SCOPING MEETING ORAL COMMENTS

RESPONSES

The following summarizes the environmental-related comments received by the AQMD at the Public Workshop for PAR 1113. The comments have been grouped by environmental topic. Responses to each comment are also included.

Safety

Comment #1: Lane restrictions are often required when Caltrans paints bridges. Potential safety problems may occur if passerby's are exposed to hazardous materials.

Response #1: When Caltrans performs most types of work near roadways, lane restrictions already occur. With regard to safety problems, it is assumed the comment refers to greater use of two-component polyurethane IM coating systems to comply with the final compliance date of 2005 that may contain one of three forms of diisocyante, TDI, HDI, and MDI. TDI is considered to be a carcinogen, while all three can generate allergic reactions in sensitive individuals. The main concern is when the coating is sprayed onto the substrate. During the application process it may be possible that the diisocyante could volatilize and come into contact with motorists or pedestrians in the immediate area. Subsequent to release of the NOP/IS, PAR 1113 was modified to address this concern. New section (d)(8) in PAR 1113 prohibits spray application of two-component polyurethane resin coatings effective January 1, 2008. As a result of this modification to PAR 1113, safety problems are not anticipated to occur as a result of adopting PAR 1113.

Comment #2: New coatings may not have the appropriate brittleness and would not crack along with the infrastructure. The crack may be missed during infrastructure inspections and thus result in adverse safety impacts.

Response #2: Low-VOC coatings are available in a variety of formulations, depending on their recommended uses. For example, low- and zero-VOC coatings are available for industrial maintenance uses that have either a rigid film or an elastomeric film that provides flexibility. The use of each is dependant on the type of substrate to be coated, the exposure conditions for the substrate, and the desired service life of the coating.

Comment #3: There is the potential for public endangerment if coatings have short life-cycles or are less corrosive resistant, which may lead to destruction of infrastructure (e.g., water tanks, bridges, pipelines).

Response#3: Staff reviewed coating product data sheets (see the tables in Appendix D and the relevant summary tables in Chapter 4) to obtain durability information for low VOC coatings and conventional coatings. Based upon a comparison of the coating product information sheets, staff concluded that low VOC coatings have durability characteristics comparable to conventional coatings. Based upon staff research of coating product information sheets, no significant adverse infrastructure impacts are anticipated from implementing PAR 1113. Also, refer to the response to comment #1-9 regarding durability and other characteristics of low VOC coatings and the air quality analysis of issues identified by the architectural coatings industry.

Comment #4: High temperature indicating paints are used for safety reasons at refineries and other industrial sites. No compliant coatings are currently available for this safety-related use.

Response #4: To address this issue, PAR 1113 has been modified to include a high temperature industrial maintenance category with the following VOC content limits and compliance dates: 550 grams per liter by January 1, 2002, and 420 grams per liter by January 1, 2005.

Comment #5: Coatings for certain uses require government approval for safety-related purposes. For example, the interior of potable water systems require chemical evaluation by the National

Sanitation Foundation. FIFRA must approve products for use below the water line of piers. Military specifications require very specific products.

Response #5: Low- and zero-VOC coatings are available and approved for storage of potable water by the National Sanitation Foundation and ANSI. United Coatings and Madison Chemical are just two of the manufacturers that have NSF/ANSI approved zero-VOC coatings for interior of potable water storage tanks.

Human Health

Comment #6: Worker safety is a concern. Special handling and expertise may be required for reformulated coatings.

Response #6: It is assumed that this comment's reference to special handling and expertise refers to the potential increased usage of two-component coating systems, which require plural spray gun equipment. It should be noted that two-component coating systems are already used in certain applications, e.g., industrial maintenance applications. Although such equipment requires training to achieve desired coating characteristics, staff has not identified any hazards associated with plural spray gun equipment that are greater or more severe than currently used coating spray equipment.

In addition to consideration of coating equipment, worker safety concerns have been raised regarding the potential for increased usage of low VOC, two-component polyurethane IM coatings. These coatings are currently contain diisocyanates, which are hazardous materials. The primary concern is while spraying the coating onto the substrate when there is a small possibility that the diisocyanate could volatilize and be inhaled or otherwise come into contact with the worker. Since release of the NOP/IS, PAR 1113 has been modified to prohibit using spray equipment for two-component polyurethane IM coatings. Please see new rule section (d)(8).

Comment #7: Some reformulations are more toxic than conventional products, especially two-component, epoxy, and catalyzed systems. While workers may have appropriate safety equipment, the general population will be exposed to greater risks.

Response #7: The issue of hazardous solvents in two components systems has been addressed in the "Hazards" and "Human Health" sections in Chapter 4. In addition, since the release of the NOP/IS, PAR 1113 has been modified to include section (d)(8) which prohibits spraying two component polyurethane systems which are the coatings of most concern after January 1, 2005. By prohibiting the use of spray equipment is expected to eliminate potential human health impacts.

Comment #8: Special certifications for health and safety requirements are needed by certain industries. The nuclear power industry has special requirements to ensure the coated surfaces remain free from contamination or are readily cleaned. Reformulations may not be appropriate for this industry. Also, coatings for interiors of potable water systems must be approved by appropriate regulatory agencies to certify no harmful leaching would occur.

Response #8: There are no nuclear power industry facilities located within the South Coast Air Basin. Low- and zero-VOC coatings are available and approved for storage of potable water by the National Sanitation Foundation and ANSI. United Coatings and Madison Chemical are just two of the manufacturers that have NSF/ANSI approved zero-VOC coatings for interior of potable water storage tanks.

Air Quality

Comment #9: There is no direct relationship between VOC content and ozone formation. Reducing VOCs may or may not reduce VOC emissions depending on performance characteristics. Reducing total VOC emissions from coatings may or may not reduce ozone levels in the Basin depending on

changes in the character, location, and timing of emission. Reducing emissions under certain conditions could increase ozone formation.

Response #9: Please refer to responses comments #1-3 and #1b-1 from comment letters #1 and #1b, respectively.

Comment #10: Failure of reformulated coatings lead to a greater number of applications and greater VOC emissions.

Response #10: Please refer to response to comment #3 above.

Waste

Comment #11: Reformulations with reduced pot lives will lead to additional disposal of additional hazardous wastes.

Response #11: Reduced pot life is an issue related to two-component coating systems. Staff contacted resin manufactures about this issue. Resin manufactures indicated that wastes from two-component coating systems are not hazardous wastes, but are disposed of simply as a solid waste. With regard to potential adverse impacts to landfills as a result of implementing PAR 1113, specifically the issue related to solid waste impacts resulting from shortened pot life, please refer to the solid waste analysis in Chapter 4.

Comment #12: PAR 1113 may require more equipment cleaning, which results in increased wastewater.

Response #12: The analysis of water resources impacts in Chapter 4 takes into account the increased generation of wastewater to clean equipment used to apply compliant coatings. The analysis indicated that this impact would not be significant. Please refer to the analysis in Chapter 4 for more detailed information.

General

Comment #14: If costs of materials increase, users may use cheaper products with adverse environmental impacts.

Response #14: Although specific environmental impacts were not identified, it is assumed that this comment refers to potential impacts resulting from the failure of low VOC coating systems for specific applications. Please refer to the response to comment #3 above.

Comment #15: Coating substitutions such as brick, siding, tiles, etc., may not perform as well or as efficiently in terms utilizing raw materials and energy. Coatings are typically the most efficient use of resources and energy to accomplish the intended aim. Thus, substitution of these alternative surface finishing methods would result in an increased burden on the total ecology.

Response #15: It is assumed that the commentator is implying that the performance characteristics of compliant low VOC coatings will be inferior to conventional coatings, so substitutions such as those identified by the commentator will need to be used. As noted in the response to comment #3, based on staff research of the product data sheets, there are, generally, a substantial number of low VOC coatings that are currently available, that have performance characteristics comparable to conventional coatings. In addition, there is no indication that brick, siding, and tiles would be substitutes for either interior or exterior flat coatings. See also the air quality analysis in Chapter 4.

Comment #16: The SCAQMD should consider innovative alternative approaches identified in the NOP. Exemption for low volatility compounds and a simplified averaging provision alternative should be explored. The existing averaging provision is not viable for use by coating manufacturers.

Response #16: Potential alternatives identified in the NOP/IS and discussed by the Industry Working Group for consideration include the following: exemption for low volatile compounds (see response to comment #1c-12); seasonal deregulation (see response to comment #1c-14); regional deregulation (see response to comment #1c-15); reactivity based regulation (see response to comment #1b-1); performance based standards (see response to comment #1c-9); product line averaging (see response to comment #1c-13); and public advisories/voluntary action (see response to comment #1c-16). The commentator is also referred to Chapter 5 of the Draft SEA for a description and analysis of the currently proposed project alternatives. If this comment refers to alternative regulatory coating categories, the commentator is referred to the response to comment #3-6.

Comment #17: Contractors will have a greater liability problem with unproven replacement coatings that are applied in environmentally sensitive or production areas, or where coating failure can cause structural, equipment and/or environmental damage that exhaust a contractor's financial resources to correct.

Response #17: Please refer to response to comment #3 and the air quality analysis in Chapter 4.