SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Final Environmental Assessment:

Proposed Amended Rule 1144 – ~~Vanishing Oils~~ Metalworking Fluids and~~,~~ Direct-Contact Lubricants~~, Metal Working Fluids and Rust Inhibitors~~

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PREFACE

This document constitutes the Final Environmental Assessment (EA) for Proposed Amended Rule (PAR) 1144 – Metalworking Fluids and Direct-Contact Lubricants. The Draft EA was released for a 30-day public review and comment period from February 16, 2010, to March 17, 2010. Five comment letters were received from the public; however, only one of the comment letters addressed the Draft EA. The comment letter that addressed the Draft EA and response to comments are included in Appendix C. The other comment letters that address rule issues will be responded to in the Final Staff Report for PAR 1144.

Changes in VOC Content Limits to PAR 1144 and Metalworking Fluid Category Names
Subsequent to the release of the Draft EA for public review, PAR 1144 was modified:

- PAR 1144 was renamed Metalworking Fluids and Direct-Contact Lubricants.
- The January 1, 2015, VOC content limit requirement of 50 grams per liter for metalworking fluids was removed;
- The metalworking fluids category has been split into four sub-categories: metal forming, metal removal, metal treating and metal protecting. The rust inhibitor category requirements (general and military specified preservative) have been placed under the new metal protecting category.
- The military specified preservative sub-sub-category VOC content limit of 340 grams per liter effective date has been moved forward from January 1, 2012, to January 1, 2011;
- A new VOC content limit of 75 grams per liter, effective January 1, 2012, has been applied to the metal protecting sub-category; metal forming sub-category; and metal removal sub-category, general sub-sub-categories;
- The VOC content for the precision metal removal sub-sub-category under the metal removal category would have a 130 gram per liter VOC content limit, effective January 1, 2012, which is the same VOC content limit as the metalworking fluid category circulated in the Draft EA; and
- The direct-contact lubricant interim VOC content limit of 70 grams per liter, effective January 1, 2012 has been removed, and replaced with the Final VOC content limit of 50 gram per liter, effective January 1, 2012, instead of January 1, 2015.
- The VOC content test method has been changed from ASTM E1968-09 to ASTM E 1868-10 Standard Test Method for Loss-On-Drying by Thermogravimetry with quality assurance and quality control procedures conducted using SCAQMD Additional Requirements to ASTM Standard Test Method E 1868-10 for Metalworking Fluids and Direct-Contact Lubricants; or SCAQMD Method 319-10 Determination of Volatile Organic Compounds (VOC) in Metalworking Fluids and Lubricants by Thermogravimetry; or the option to use either ASTM E 1868-10 with quality assurance and quality control procedures conducted using SCAQMD Additional Requirements to ASTM Standard Test Method E 1868-10 for Metalworking Fluids and Direct-Contact Lubricants or SCAQMD Method 319-10. The Governing Board will choose the source test method options for PAR 1193 before adoption.
- An exemption has been added to allow the use of dimethyl carbonate (DMC) as a cooling solvent in computerized numerically controlled (CNC) machines where permeable media are used to maintain a vacuum that holds the part in place during cutting provided that the

equipment existed at the time of rule adoption, is enclosed and an exhaust fan discharges the exhaust air from the equipment out of the building.

Effects Evaluated in the Draft EA Circulated to the Public for Review

The draft EA analyzed potentially significant adverse environmental impacts from the following three effects of PAR 1144:

- Light naphthenic-based oils (40 SUS) would be replaced with heavier naphthenic-based oils (60 SUS) before the January 1, 2012, effective dates;
- Naphthenic-based oils would be replaced with paraffinic-based oils before the January 1, 2015, effective dates; and
- Metalworking fluids containing naphthenic-based oils that are not replaced with paraffinic-based oils would be replaced with water-soluble or vegetable-based oils.

Environmental Analysis of Modifications to PAR 1144 Subsequent to the Public Review of the Draft EA

The proposed rule has been modified to address several key issues brought to staff's attention during the rule making period. The terminology used for describing products and processes subject to the rule was altered to conform to government and industry standards. The proposed 50 grams per liter limits effective in January 2015 were withdrawn and staff is committing to work with interested parties to explore the feasibility of migrating towards the next generation of ultra-low VOC metalworking fluids at 25 grams per liter or less. To facilitate that effort, annual surveys will be conducted and a technology symposium will be held to analyze trends.

An exemption has been added to allow the use of dimethyl carbonate (DMC) as a cooling solvent in computerized numerically controlled (CNC) machines where permeable media are used to maintain a vacuum that holds the part in place during cutting provided that the equipment is enclosed and an exhaust fan discharges the exhaust air from the equipment out of the building.

Direct-contact Lubricants

The draft EA assumed that direct-contact lubricants containing naphthenic-based oils that are not replaced with paraffinic-based oils would be replaced with water-soluble or vegetable-based oils to comply with PAR 1144. However, the sales weighted average VOC content for direct-contact lubricants is 25 grams per liter; therefore, based on the sales weighted average VOC content, it is likely that currently used direct-contact lubricants currently comply with the proposed VOC content limit of 50 grams per liter. Since existing direct-contact lubricants already comply with the proposed final VOC content limit of 50 grams per liter, no incremental environmental impacts are expected. Therefore, previous impacts evaluated from reformulation of direct-contact lubricants in the Draft EA circulated for public review no longer apply.

Adverse toxic air contaminant (TAC) emission impacts were presented in the draft EA from possible increased usage of triethanolamine and monoethanolamine in water-based direct-contact lubricants. Since data now indicates that no replacement or reformulation would be needed to comply with direct-contact lubricant requirements in PAR 1144, there would be no increase in triethanolamine and monoethanolamine and, therefore, no adverse TAC impacts. The draft EA evaluated secondary adverse impacts from transportation of reformulated or replacement direct-contact lubricants. Since it is likely that no reformulated or replacement products are needed to

comply with PAR 1144, there would be no secondary adverse impacts from transporting reformulated products.

Metalworking Fluids

No modifications are being proposed that would alter replacing light naphthenic oils with heavier naphthenic oils. Replacing light naphthenic oils with heavier naphthenic oils in metalworking fluids was evaluated in the draft EA. Both light and heavy naphthenic oils are supplied from the same refinery in Bakersfield, California. Since heavier naphthenic oils would be transported in the same quantities from the same refinery in Bakersfield, California; the environmental impacts from replacement of light naphthenic oils with heavier naphthenic oils would be the same. Therefore, it was concluded that there would be no incremental environmental impacts from replacing light naphthenic oils with heavier naphthenic oils in the Draft EA. Consequently, the conclusion in the draft EA would be the same (i.e., no incremental increase in potential environmental impacts).

The draft EA evaluated increased environmental impacts (air quality and energy from rail car transportation) from replacing naphthenic oils in metalworking fluids with paraffinic oils produced in Richmond, California and Texas. In the metalworking fluid category, excluding general metal protecting fluids, the proposed final VOC content limit has been modified to 75 grams per liter instead of 50 grams per liter. Based upon available VOC content data, it is expected that the 75 grams per liter VOC content limit can be met by reformulating affected products with heavier naphthenic oils instead of reformulating with paraffinic oils. Therefore, impacts from transport of non-naphthenic oils are no longer applicable. Since heavier naphthenic oils would continue to be transported in the same quantities from the same refinery in Bakersfield, California; the environmental impacts from replacement of light naphthenic oils with heavier naphthenic oils would be similar to the existing setting.

An exemption has been added to PAR 1144 to allow the use of dimethyl carbonate (DMC) as a cooling solvent in computerized numerically controlled (CNC) machines where permeable media are used to maintain a vacuum that holds the part in place during cutting, because the company that has a CNC machine stated that dimethyl carbonate was the only solvent found that can replace the currently used denatured ethyl alcohol and meet both the VOC limits under PAR 1144 and performance requirements needed by facility operators.

A comment letter was received on this exemption that was concerned about health risk to on-site workers, because the CNC machine is currently vented into the room where it is housed. The commenter asked that health risks to the workers be analyzed. Health risks to occupational workers could not be directly analyzed, because occupational health values have not been published by a regulatory agency. Therefore, to address this issue the exemption was modified to require that CNC machines must be enclosed with an exhaust fan that discharges the exhaust air from the equipment out of the building.

SCAQMD has identified only one facility that uses DMC as a cooling solvent in computerized numerically controlled (CNC) machines where permeable media are used to maintain a vacuum that holds the part in place during cutting. Because of the capital cost of this type of CNC machines, it is not believed that another such machine would be installed either at the affected

facility or at any other facility. The existing CNC machine is enclosed, but would need an exhaust fan to discharge the exhaust air from the equipment out of the building. The installation of ducting is not expected to require heavy duty construction equipment so no adverse construction impacts are expected. OEHHA has established interim acute and chronic reference exposure level (REL) values of 18,000 and 5,500 micrograms per cubic meter respectively for DMC. EPA has developed a unit risk factor for carcinogenic health risk of 1E-6 cubic meters per microgram for methanol that is under public review. Since DMC can be metabolized into methanol, a carcinogenic health risk can be estimated for the maximum amount of methanol that can be degraded from the DMC emitted.

Health risk was analyzed from the projected usage of 327 gallons of DMC per year at the affected facility upon off-site sensitive and worker receptors. The non-carcinogenic acute and chronic hazard indices for worker and sensitive receptors were each less than the significance threshold of 1.0. The carcinogenic health risk based on the maximum methanol concentration modeled at a worker receptor was estimated to be 3.3 in one million, which is less than the significance threshold of 10 in one million. The maximum carcinogenic health risk for a residential receptor was estimated to be 2.1 in one million, which is less than the significance threshold of 10 in one million. The health risk from DMC would be the only health risk from the proposed project, because no other health effects were identified from PAR 1144.

Based on the above analysis the incremental increase in acute and chronic non-carcinogenic and carcinogenic health risks remain below the significance thresholds; therefore, there is no change in conclusion. Adverse impacts from DMC are not a substantial revision of the negative declaration according to CEQA Guidelines §15073.5(b) because adverse impacts would not result in avoidable significant effects and mitigation measures or project revisions were not needed in order to reduce the effect to insignificance. Therefore, recirculation is not required according to CEQA Guidelines §15073.5(c) because no mitigation measures were replaced; new project revisions were added in response to comments, but are not new avoidable significant effects; measures or conditions of project approval were added after circulation of the EA which are not required by CEQA and do not create new significant environmental effects and are not necessary to mitigate to an avoidable significant effect; and new information has been added to the EA which clarifies, amplifies or makes insignificant modification to the EA.

Metal Protecting Fluid

The VOC content limit of 50 grams per liter for general metal protecting fluids was previously required by the existing Rule 1144 under the rust inhibitor category, PAR 1144 would only rename this category and place it as a sub-sub category under the metalworking fluid category. This modification is administrative in nature and would not generate any new impacts or increase the severity of any existing impacts.

Other Minor Changes to PAR 1144

Definitions for metal forming fluid, metal protecting fluid, metal removal fluid, metal treating fluid, and precision metal removal fluid have been added. A requirement for metalworking fluid/direct-contact lubricant manufacturers/suppliers to submit an annual quantity and emissions report for fluids subject to the rule sold within the district beginning in 2011 and ending in 2013

has been added. Changes in language have also been made to clarify PAR 1144. These changes are administrative in nature and do not affect any environmental topic.

Conclusion

The modifications to the VOC content limits for several categories of metalworking fluids or direct-contact lubricants, which were made after the Draft EA was circulated for public review, would increase the VOC emissions reductions from 0.75 ton per day to 0.86 ton per day. Reformulation or replacement of existing metalworking fluids and direct-contact lubricants was identified as the component of the proposed project generating potentially significant adverse secondary environmental impacts analyzed in the Draft EA circulated for public review. Modifications made to PAR 1144 subsequent to the release of the Draft EA for public review, result in less reformulation or replacement of existing metalworking fluids and direct-contact lubricants. With the exception of replacing light naphthenic oils with heavier naphthenic oils in metalworking fluid, based on the VOC contents of existing affected products no reformulation is expected to be required to meet the VOC content limits in the version of PAR 1144 revised after the draft EA was released for public comment. The replacement of light naphthenic oils with heavier naphthenic oils in metalworking fluid was evaluated in the draft EA circulated for public review and was determined not to have any incremental adverse environmental impacts. An exemption has been added to allow the use of DMC as a cooling solvent in an existing CNC machine where permeable media are used to maintain a vacuum that holds the part in place during cutting provided that the equipment is enclosed and an exhaust fan discharges the exhaust air from the equipment out of the building. Health risk were evaluated for this exemption and found to be less than significant.

Therefore, the changes to PAR 1144 after the draft EA was release for public comment would have fewer or less significant environmental impacts than those presented in the draft EA. No new adverse impacts would be introduced by these proposed changes. Therefore, there would be no proposed change to the non-significance determination conclusions in the Draft EA. Since the adverse impacts from the proposed project would remain not significant, no new or additional mitigation would be required. Therefore, the proposed changes to PAR 1144 are not considered a "substantial revision" under CEQA Guidelines §15073.5 (b) and would not require recirculation under CEQA Guidelines §15073.5 (a).

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INTRODUCTION

The California Legislature created the South Coast Air Quality Management District (SCAQMD) in 1977[1] as the agency responsible for developing and enforcing air pollution control rules and regulations in the South Coast Air Basin (Basin) and portions of the Salton Sea Air Basin and Mojave Desert Air Basin (collectively known as the "district"). By statute, the SCAQMD is required to adopt an air quality management plan (AQMP) demonstrating attainment of all federal and state ambient air quality standards for the district[2]. Furthermore, the SCAQMD must adopt rules and regulations that carry out the AQMP[3]. The 2007 AQMP concluded that major reductions in emissions of volatile organic compounds (VOCs) and oxides of nitrogen (NOx) are necessary to attain the state and national ambient air quality standards for ozone, particulate matter with an aerodynamic diameter of 10 microns or less (PM10) and particulate matter with an aerodynamic diameter of 2.5 microns or less (PM2.5). Ozone, a criteria pollutant, is formed when VOCs react in the presence of ~~life~~ light with NOx in the atmosphere and has been shown to adversely affect human health. VOC emissions also contribute to the formation of PM10 and PM2.5. The former federal one-hour and the federal eight-hour ozone standards were exceeded in all four counties and in the Salton Sea Air Basin in 2008. The Central San Bernardino Mountain area recorded the greatest number of exceedences of the one-hour state standard (79 days), eight-hour state standard (115 days), eight-hour federal standard (97 days), as well as, health advisory days (two days). Altogether, in 2008, the South Coast Air Basin exceeded the federal eight-hour standard on 120 days, the state one-hour standard on 102 days, and the state eight-hour standard on 140 days.

In March 2009, Rule 1144 – Vanishing Oils and Rust Inhibitors, was adopted establishing VOC content limits for vanishing oils and rust inhibitors used during metalworking and metal-forming operations. Vanishing oils are a small subset of metalworking fluids designed to evaporate shortly after use. Rust inhibitors are inhibitors, preventatives or protectants used to prevent the corrosion of metal substrates. However, the vast majority of fluids used during metalworking and/or metal forming operations are lubricants and metalworking fluids. These fluids are used at steel tube and spring manufacturers, steel mills, aerospace manufacturers, automobile part manufacturers and rebuilders, as well as machine shops for broaching, drilling, drawing, heading, honing, forging, milling, stamping, tapping, threading and turning operations.

While EPA Method 24 is the default method for determining VOC content, it is unreliable for semi-volatile materials typically found in lubricants and metalworking fluids. During the rule development process for Rule 1144, it was decided not to include limits for metal lubricants and metalworking fluids until a more reliable method was tested and validated. Recently a thermogravimetric analysis (TGA) method was developed and was determined to be an accurate and reliable test method, so validation of the TGA method is anticipated. With development of the TGA~~,~~ method VOC content can be established for these widely used fluids, facilitating the inclusion of lubricants and metalworking fluids into Rule 1144. The rule title would be amended to reflect the updated applicability of the proposed requirements. In addition, if approved, the

[1] The Lewis-Presley Air Quality Management Act, 1976 Cal. Stats., ch 324 (codified at Health & Safety Code, §§40400-40540).
[2] Health & Safety Code, §40460 (a).
[3] Health & Safety Code, §40440 (a).

proposed amended rule would fully implement control measure CTS-01-Emission Reduction from Lubricants in the 2007 Air Quality Management Plan.

The proposed amended rule would add VOC content limits for ~~two~~ new sub-metalworking fluid categories: metal forming, metal removal, metal treating; and direct-contact lubricants ~~and metal working fluids~~; add a VOC content limit for a new ~~rust inhibitor~~ metal protecting fluid sub-category, military specified preservative; require record keeping of affected working fluid and revising the test method used to determine VOC content.

The proposed future VOC content limits would reduce VOC emissions by ~~1,500~~ 1,720 pounds (~~0.75~~ 0.86 tons) per day. Staff estimates that more than 7,000 shops would be subject to the requirements of the proposed amended rule.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

Proposed amended Rule (PAR) 1144 is a discretionary action, which has potential for resulting in direct or indirect changes to the environment and, therefore, is considered a "project" as defined by the California Environmental Quality Act (CEQA). SCAQMD is the lead agency for the proposed project and has prepared this ~~draft~~ final environmental assessment (EA) with no significant adverse impacts pursuant to its Certified Regulatory Program and SCAQMD Rule 1110. California Public Resources Code §21080.5 allows public agencies with regulatory programs to prepare a plan or other written document in lieu of an environmental impact report or negative declaration once the Secretary of the Resources Agency has certified the regulatory program. SCAQMD's regulatory program was certified by the Secretary of the Resources Agency on March 1, 1989, and is codified as SCAQMD Rule 110.

CEQA and Rule 110 require that potential adverse environmental impacts of proposed projects be evaluated and that feasible methods to reduce or avoid significant adverse environmental impacts of these projects be identified. To fulfill the purpose and intent of CEQA, the SCAQMD has prepared this ~~draft~~ final EA to address the potential adverse environmental impacts associated with the proposed project. The ~~draft~~ final EA is a public disclosure document intended to: (a) provide the lead agency, responsible agencies, decision makers and the general public with information on the environmental effects of the proposed project; and, (b) be used as a tool by decision makers to facilitate decision making on the proposed project.

SCAQMD's review of the proposed project shows that the proposed project would not have a significant adverse effect on the environment. Therefore, pursuant to CEQA Guidelines §15252, no alternatives or mitigation measures are required to be included in this ~~draft~~ final EA. The analysis in Chapter 2 supports the conclusion of no significant adverse environmental impacts.

~~Comments received on the Draft EA during the public comment period will be addressed in the Final EA.~~ Five comment letters were received from the public; however, only one of the comment letters addressed the Draft EA. The comment letter that addressed the Draft EA and response to comments are included in Appendix C. The other comment letters that address rule issues will be responded to in the Final Staff Report for PAR 1144.

PROJECT LOCATION

PAR 1144 would affect manufacturing and assembly operations at industrial metalworking facilities located throughout the SCAQMD's jurisdiction. The SCAQMD has jurisdiction over an area of 10,473 square miles, consisting of the four-county South Coast Air Basin (Basin) and the Riverside County portions of the Salton Sea Air Basin (SSAB) and the Mojave Desert Air Basin (MDAB) referred to hereafter as the district. The Basin, which is a subarea of the district, is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The 6,745 square-mile Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. The Riverside County portion of the SSAB and MDAB is bounded by the San Jacinto Mountains in the west and spans eastward up to the Palo Verde Valley. The federal non-attainment area (known as the Coachella Valley Planning Area) is a subregion of both Riverside County and the SSAB and is bounded by the San Jacinto Mountains to the west and the eastern boundary of the Coachella Valley to the east (Figure 1-1).

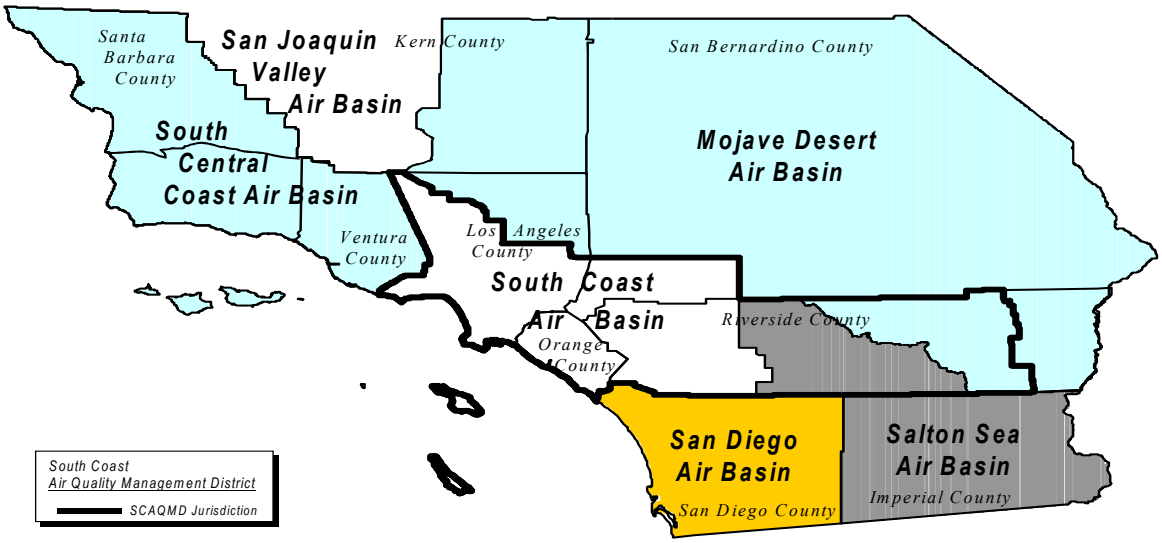

Figure 1-1
Boundaries of the South Coast Air Quality Management District

PROJECT OBJECTIVE

One objective of PAR 1144 is to fully implement the 2007 AQMP control measure CTS-01 – Emission Reductions from Lubricants. A second objective of PAR 1144 is to achieve additional VOC emission reductions from affected facilities, which would assist the SCAQMD's efforts to attain and maintain applicable national and state ambient air quality standards. The proposed amended rule would achieve additional VOC emission reductions by adding VOC content limits

for ~~two~~ new sub-metalworking fluid categories: metal forming, metal removal, metal treating; and direct-contact lubricant ~~and metalworking fluid~~; adding a VOC content limit for a new ~~rust inhibitor~~ metal protecting fluid sub-category, military specified preservative; requiring record keeping of affected working fluid; and revising the test method used to determine VOC content.

PROJECT BACKGROUND

In March 2009, Rule 1144 was adopted establishing VOC content limits for vanishing oils and rust inhibitors used during metalworking and metal-forming operations. Vanishing oils and solvent cutback rust inhibitors consist entirely or nearly entirely of mineral spirit type solvents. While they are a significant source of VOC emissions, they represent only a small fraction of the overall volume of fluids used by machine shops. The bulk of the volumes used are metalworking fluids and lubricants. Unlike vanishing oils and solvent cutback rust inhibitors, metalworking fluids and lubricants mainly consist of semi-volatile compounds for which a reliable VOC content test method was not available by the March 2009 rule adoption date. However, recently a thermogravimetric analysis (TGA) method was developed ~~and validation is anticipated~~. With the development of the TGA method VOC content limits can be established for these widely used fluids, facilitating the inclusion of direct-contact lubricants and metalworking fluids into Rule 1144.

Over 7,200 facilities, predominantly small businesses, use vanishing oils, direct-contact lubricants, metalworking fluids or rust inhibitors in the South Coast Air Basin. Affected facilities are classified as fabricated metal product manufacturing [North American Industry Classification System (NAICS) Code 332], machinery manufacturing (NAICS 333), transportation equipment manufacturing (NAICS 336), and petroleum and coal products manufacturing (NAICS 324) sectors in the AQMD. Typical industries using lubricants, metalworking fluids and rust inhibitors include:

- Aerospace
- Machine Shop (Job Shop)
- Steel Mills
- Auto Rebuild
- Screw Machine
- Steel Tubes (Pipes)
- Steel Springs
- Maintenance
- Captive

Captive machine shops are machine shops located inside of another type of business (aerospace, automotive, etc.) that supports the business, but is not the primary aspect of that business.

Lubricants and metalworking fluids are used to reduce heat and friction to prolong the life of industrial tools used at affected facilities, to improve product quality, and carry away debris. Typical operations affected by PAR 1144 include:

- Broaching – Keyway, slots or spline utilized in gear manufacturing
- Drilling – Producing cylindrical holes

- Drawing - Forming flat sheet metal into "cup-shaped" parts. If the depth of the formed cup is equal to or greater than the radius of the cup, the process is called deep drawing.
- Heading – A metal forging process which involves rapidly punching a blank into a die to form a desired shape without adding heat. Cold heading is most frequently used to produce fasteners such as bolts and screws without adding heat.
- Honing - Manufacture of precision bores to improve the geometry, surface finish and dimensional control of the finished part.
- Forging - Shaping metal by using localized compressive forces. Cold forging is done at room temperature or near room temperature. Hot forging is done at a high temperature, which makes metal easier to shape and less likely to fracture. Common forging processes include: roll forging, swaging, cogging, open-die forging, impression-die forging, press forging, automatic hot forging and upsetting.
- Milling – A precisely controlled rotating cutter which rotates about the spindle axis and a table to which the workpiece is affixed. The cutter and workpiece move relative to each other, generating a toolpath along which material is removed.
- Rust Preventative/Inhibitor - Prevention of corrosion on ferrous materials and some nonferrous materials
- Stamping – A process by which sheet metal strips are punched using a press tool which is loaded on a press to form the sheet into a desired shape.
- Tapping – Creating threaded holes in parts or boring into parts and pipelines
- Threading - Thread cutting and thread rolling applications for pipes and bolts
- Turning - Operation that produces cylindrical parts
- Wire drawing - Reducing or changing the diameter of a wire or rod by pulling the wire or rod through a single or series of drawing die(s).

The fluids used in the above industrial operations are complex mixtures of a base material (oil), and emulsifiers, anti-weld agents, corrosion inhibitors, extreme pressure additives, buffers (alkaline reserve), biocides, as well as other additives. The base material may be naphthenic, paraffinic or synthetic. Some products contain extreme pressure (EP) additives containing chlorinated, sulfurized, or phosphorus-type extreme pressure ingredients. There are numerous formulations, ranging from straight oils (such as naphthenic and paraffinic petroleum oils) to water-dilutable fluids, which include soluble oils and semi-synthetic/synthetic fluids. In general, higher oil content provides better lubricity while higher water content allows more rapid cooling. The following bullets briefly describe the most common types of fluids.

- **Straight oil (neat oil) fluids** are refined naphthenic and paraffinic petroleum or vegetable oils. Straight oils are not designed to be diluted with water. Light oils are naphthenic oils with a viscosity of 4.28 centistokes (40 SUS) or lower.
- **Soluble oil (emulsifiable oil) fluids** are combinations of 30 percent to 85 percent straight oils and emulsifiers that may include other performance additives. Soluble oils may be diluted with 5 to 40 parts water.
- **Semi-synthetic fluids** contain a lower amount of straight oil in the concentrate (5 percent to 30 percent), more emulsifiers, and 30 percent to 50 percent water. The concentrate is further diluted with 10 to 40 parts water.
- **Synthetic fluids** contain no petroleum oils and may be water soluble or water dispersible. The synthetic concentrate is diluted with 10 to 40 parts water.

In 2006, the AQMD and U.S. EPA Region IX co-sponsored a report by the Institute for Research and Technical Assistance to identify, test and demonstrate alternative low-VOC materials for vanishing oils and rust inhibitors. The final report, entitled Assessment, Development and Demonstration of Alternatives to VOC-Emitting Lubricants, Vanishing Oil and Rust Inhibitors concludes that "alternative low-VOC materials for a variety of different types of metalworking operations are available and cost effective". Thirteen facilities participated in the study that reviewed stamping, honing, cutting, forming and rust inhibitor applications. In each high-VOC application, a low-VOC alternative was demonstrated to have equivalent performance. Some of the participants found that their cost increased with the alternatives, but the majority realized a cost-savings.

PROJECT DESCRIPTION

The following summarizes requirements of the proposed amended rule. ~~A copy of PAR 1144 is included in Appendix A.~~ The title of PAR 1144 has been changed from Vanishing Oils, Direct-Contact Lubricants, Metalworking Fluids and Rust Inhibitors to Metalworking Fluids and Direct-Contact Lubricants.

Purpose and Applicability (Subdivisions (a) and (b))

The purpose and applicability of the rule would be expanded to include direct-contact lubricants and metalworking fluids. The terms vanishing oils and rust inhibitors have been removed from the applicability, since vanishing oils are now defined as direct-contact or metalworking fluids and rust inhibitors have been renamed metal protecting fluids and placed as a sub-category under metalworking fluids. These products represent the bulk of fluids used for metalworking and metal-forming operations. Including these products would reduce VOC emissions and provide clarity with respect to applicability for the most widely used metalworking and metal-forming fluids.

Metal forming and metal treating have been added to the examples of metalworking in the applicability section. Blanking, coining, marquenching, piercing and roll forming have been added to the examples of specific metalworking operations.

Definitions of Terms (Subdivision (c))

The definitions for metal forming fluid, metal protecting fluid, metal removing fluid, metal treating fluid, military specified preservative, precision metal removing fluid, super compliant material and working fluid would be added. Reducing heat has been removed as a property from the direct-contact lubricant definition. A sentence stating that a direct-contact lubricant is not a metal forming fluid or a metal removal fluid has been added to the definition of direct-contact lubricant. The definition of metalworking fluid has been changed to state that it is a fluid that facilitates operations involving the working or modification of metals, including metal forming, protecting, treating and removal. The phrase "function in the tool and workpiece interface used to improve product quality and carry away debris" has been removed from the definition of metalworking fluid. Soluble oils have been replaced with emulsifiable oils in the definition of metalworking fluid. The definition of rust inhibitor has been replaced with metal protecting fluid. Vanishing oil was defined as a direct-contact lubricant, metalworking fluid or oil, but now is defined only as direct-contact lubricant or metalworking fluid.

Requirements (Subdivision (d))

The rule requirements would reflect the expansion of the rule to include direct-contact lubricants and metalworking fluids. Where "vanishing oils and rust inhibitors" were named in general terms, they have been replaced with "metalworking fluids and direct-contact lubricants." Table A has been expanded to add new VOC content limits for direct-contact lubricants and metalworking fluids. The direct-contact VOC content limit would be ~~70 grams per liter effective January 1, 2012, and then reduce to~~ 50 grams per liter effective January 1, ~~2015~~2012. ~~The metal working fluid VOC content limit would be 130 grams per liter effective January 1, 2012, and then reduce to 50 grams per liter effective January 1, 2012~~. Metalworking has become a category with sub-categories and sub-sub-categories with specific VOC content limits and effective dates. Metal forming was added as a sub-category under metalworking fluid with a VOC content limit of 75 grams per liter effective January 1, 2012. Metal treating was added as a sub-category under metalworking fluid with a VOC content limit of 75 grams per liter effective January 1, 2012. A metal removal sub-category has been added under metalworking fluid with two sub-sub-categories: general and precision metal removal. General metal removal fluid would have a VOC content limit of 75 grams per liter effective January 1, 2012. Precision metal removal fluid would have a VOC content limit of 130 grams per liter effective January 1, 2012.

The rust inhibitor category would be renamed metal protecting and further defined into general ~~rust inhibitors~~ and military specified preservative. The general metal protecting fluid ~~rust inhibitor~~ VOC content limit would retain the current VOC limit of 300 grams per liter, and then would drop to 50 grams per liter effective January 1, 2012. The military specified preservative metal protecting fluid ~~rust inhibitor~~ would not have a VOC content limit until January 1, 2011~~2012~~, at which point the VOC limit would be 340 grams per limit. No change to the vanishing oil VOC content limit is proposed.

Additional language has been added to the prohibition of sale. The existing rule states that the prohibition of sale shall not apply to any manufacturer or supplier provided the product was sold to an independent distributor that was informed in writing by the manufacturer about the compliance status of the product with Rule 1144. The language has been modified to state that the prohibition of sale shall not apply to any manufacturer or supplier provided the product was sold to an independent distributor that was informed in writing by the manufacturer or supplier that the metalworking fluid or direct-contact lubricant is not to be used in the SCAQMD.

A new exclusion has been added that states that the prohibition of sale would not apply to any manufacturer or supplier of metalworking fluid or direct-contact lubricant used in an emission control system pursuant to PAR 1144.

Control Equipment (Subdivision (e))

~~No changes are proposed.~~ The existing rule states that in lieu of complying with the requirements as presented in section (d) Requirements, a person may operate an emission control system. The language has been changed to state that a person may use metalworking fluids and direct-contact lubricants in excess of the limits provided all metalworking fluids and direct-contact lubricants are controlled by an emission control system.

Administrative Requirements (Subdivision (f))

A new administrative requirement would be added. The requirement would necessitate the display of the VOC content of any working fluid subject to PAR 1144 and the date of manufacture of the working fluid or a code indicating the date of manufacture of the working fluid on working fluid containers for sale or distribution. If date codes are used, then manufactures would need to file an explanation of each date code with the SCAQMD Executive Officer. A new requirement has been added that states for each calendar year beginning with 2011 and continuing with each subsequent calendar year until 2013, a metalworking fluid or direct-contact lubricant manufacturer or supplier would need to submit to SCAQMD by April 1 of the following calendar year, an annual quantity and emissions report for the products subject to the rule sold within the district. The report format would need to be approved by the Executive Officer, and shall include the annual sales volume and VOC content of metalworking fluids and direct-contact lubricants sold or distributed.

Recordkeeping Requirements (Subdivision (g))

The existing rule requires that records be kept pursuant to Rule 109 and state that vanishing oils and rust inhibitors that contain 50 grams of VOC per liter of material or less are considered super compliant materials per Rule 109 (b)(6). PAR 1144 would move the definition of super compliant materials to the definitions subdivision (c) of PAR 1144. PAR 1144 would replace the reference to Rule 109 recordkeeping requirements with rule-specific (i.e., PAR 1144) recordkeeping requirements. PAR 1144 would require ~~that~~ owners or operators to prepare and maintain a VOC list of all VOC-containing metalworking fluids purchased for use at the facility. The list would need to be kept in a format specified by SCAQMD or in an equivalent format with the name of the facility, SCAQMD identification number of the stationary source if applicable. The working fluid VOC list would need to include the manufacturer, manufacturer product number, ID, or code, PAR 1144 working fluid category and VOC content in grams of VOC per liter of material. The VOC list would need to be updated within seven calendar days from receipt of a new working fluid at the facility. The owner/operator would be required to keep a monthly log that records the facility name and SCAQMD facility identification number; manufacturer product number, ID, code from the VOC list; monthly amount of each working fluid used; initials of the person recording the data; and the date the data was recorded. The owner operator of a stationary source would be required to maintain and make available upon SCAQMD request all of the information necessary to verify the amount of working fluid used at the facility including, but not limited to: purchase records identifying the supplier's name, date and amount of working fluid purchased~~; and waste manifests identifying the waste working fluid's source and address, name and address of the company responsible for removing the waste, and amount of waste working fluid disposed~~. In lieu of the above recordkeeping requirements, records can be maintained pursuant to Rule 109 for all applications subject to PAR 1144. Manufacturers or suppliers of metalworking fluids and direct-contact lubricants shall maintain records to verify data used to determine VOC content in preparing their annual quantity and emissions report. The records would be required to be maintained for five years and made available upon request. Such records would include laboratory reports or VOC calculations.

Test Methods and Procedures (Subdivision (h))

PAR 1144 would remove the requirement for the use of USEPA Reference Method 24 or SCAQMD Method 304 to determine VOC content. PAR 1144 would require VOC content to be

determined by the use of a thermogravimetric method. If approved by ASTM International, VOC content would be determined by ASTM E1868 – 10 ~~09~~ Standard Test Method for Loss-On-Drying by Thermogravimetry ~~tested at 81 degrees Celsius for 110 minutes~~ with quality assurance and quality control procedures conducted using SCAQMD Additional Requirements to ASTM Standard Test Method E 1868-10 for Metalworking Fluids and Direct-Contact Lubricants; or SCAQMD Method 319-10 Determination of Volatile Organic Compounds (VOC) in Metalworking Fluids and Lubricants by Thermogravimetry; or the option to use either ASTM E 1868-10 with quality assurance and quality control procedures conducted using SCAQMD Additional Requirements to ASTM Standard Test Method E 1868-10 for Metalworking Fluids and Direct-Contact Lubricants or SCAQMD Method 319-10. The Governing Board will choose the test method options for PAR 1193 before adoption. Water content would be required to be determined by ASTM D 4017 – Standard Test Method for Water in Paints and Paint Materials by the Karl Fischer Method.

ASTM E 1868-10 Standard Test Method for Loss-On-Drying by Thermogravimetry with quality assurance and quality control procedures conducted using SCAQMD Additional Requirements to ASTM Standard Test Method E 1868-10 for Metalworking Fluids and Direct-Contact Lubricants; or SCAQMD Method 319-10 Determination of Volatile Organic Compounds (VOC) in Metalworking Fluids and Lubricants by Thermogravimetry; or the option to use either of ASTM E 1868-10 with quality assurance and quality control procedures conducted using SCAQMD Additional Requirements to ASTM Standard Test Method E 1868-10 for Metalworking Fluids and Direct-Contact Lubricants or SCAQMD Method 319-10.

Exemptions (Subdivision (i))
The exemptions to rule requirements would reflect the expansion of the rule to include direct-contact lubricants and metalworking fluids. Where "vanishing oils and rust inhibitors" were named in general terms, they have been replaced with "metalworking fluids and direct–contact lubricants".

An exemption from PAR 1144 recordkeeping requirements (subdivision g) would be included for metalworking fluids that are considered "Super Compliant" used at facilities whose owners or operators demonstrate that total permitted and non-permitted facility VOC emission do not exceed four tons in any calendar year, including VOC emission from super compliant materials, as shown by annual purchase records.

VOC content and prohibition of sale exemptions have been added for the use of dimethyl carbonate (DMC) used as a cooling solvent in computerized numerically controlled (CNC) machines where permeable media are used to maintain a vacuum that holds the part in place during cutting provided that the equipment existed at the time of rule adoption, is enclosed and an exhaust fan discharges the exhaust air from the equipment outside of the building.

EMISSIONS INVENTORY

The emission inventory for the proposed amended rule was prepared by reviewing national sales and comparing the number of shops nationally versus the number of shops in the district. Information was supplemented by a survey of local manufacturers and distributors.

The overall national inventory of metalworking fluids was taken from the International Lubricant Manufacturers Association (ILMA, 2003).[4] National sales were 117.2 million gallons. EPA estimates 10.2 percent of the fabricated metal industry are located in California in its Fabricated Metal Sector Notebook (EPA, 1995).[5] According to listings in the California Manufacturers Register, the district accounts for approximately 70 percent of the industry in California. This would indicate that 8.3 million gallons of MWF were sold in the district (see Table 1-1).

Table 1-1
Ratio of National Sales to South Coast Air Quality Management District Sales

Metalworking Fluid Type	Amount Sold Nationwide (millions of gallons/year)	Amount Sold in California (millions of gallons/year)	Amount Sold in South Coast (millions of gallons/year)
Straight	27.3	2.8	2.0
Soluble	49.3	5.0	3.5
Semi-Synthetic	21.7	2.2	1.5
Synthetic	18.9	1.9	1.3
Total	117.2	11.9	8.3

To supplement these estimates, in 2006, the SCAQMD conducted a survey of local MWF manufacturers, distributors and users. The survey data indicated that those local manufacturers and distributors annually sold 4.1 million gallons of lubricants (including direct-contact lubricants), metalworking fluids, rust inhibitors and solvent. It is assumed that the solvents are used as vanishing oils, rust preventatives, for thinning other metalworking fluids or cleaning. The sales weighted average VOC content was determined using TGA robustness testing and TGA simulation analysis. Solvents used for cleaning applications subject to Rule 1124 were removed from the inventory (see Table 1-2).

Rule 1144 regulated the emissions from vanishing oils, rust inhibitors and solvent in the previous rule making activity. Rule 1144 has reduced VOC emissions by two tons per day from lubricants, low-VOC metalworking fluids, and vanishing oils. An additional 0.71 ton per year was expected to be reduced by January 1, 2012 from rust inhibitors. The emission inventory, taking the already regulated categories into account, is provided below in Table 1-3.

[4].ILMA, Comments of the Independent Lubricant Manufacturers Association (ILMA) on 'Metalworking Fluids: Summary of Nomination for Review: NTP 12th Report on Carcinogens, September 2003 Submitted by Report on Carcinogens Group, NIEHS', www.ilma.org/about/ntp_comments.pdf

[5] EPA Office of Compliance, Sector Notebook Project Profile of the Fabricated Metal Products Industry, EPA/310-R-95-007, September 1995. http://www.epa.gov/compliance/resources/publications/assistance/sectors/notebooks/fabric.html.

Table 1-2
Surveyed Emission Inventory

Metalworking Fluid Type	Volume Surveyed (thousand gallons)	Sales Weighted Average VOC Content (grams per liter)	Total VOC Emission (tons per day)
Lubricants*	661.0	25	0.19
Direct-contact Lubricants	211.1	~~60~~ 25	~~0.14~~ 0.06
Naphthenic-based Metalworking Fluids**	~~1,472.~~ 745.5	~~75~~ 58	~~1.26~~ 0.49
Super Compliant Metalworking Fluids ~~Low-VOC Metal Working Fluids~~	1,339.7	25	0.38
Heavy Naphthenic-based Oil	727.0	25	0.21
Light Naphthenic-based Oil	~~48.9~~ 128.4	718	~~0.40~~ 1.05
Vanishing Oil	64.1	710	0.52
Metal Protecting Fluids ~~Rust Inhibitors~~	140.1	660	1.06
Military Specified Preservatives	15.6	660	0.12
Solvent	167.0	790	~~1.51~~ 1.21
Total	4,119.5	N/A	~~5.57~~ 5.29

*Excludes direct-contact lubricants
**Excludes light oil and vanishing oil

Table 1-3
Existing Rule Emission Inventory

Metalworking Fluid Type	Volume Surveyed (thousand gallons)	Sales Weighted Average VOC Content (grams per liter)	Total VOC Emission (tons per day)
Lubricants*	661.0	25	0.19
Direct-contact Lubricants	211.1	~~60~~ 25	~~0.14~~ 0.06
Naphthenic-based Metalworking Fluids**	~~1,472.~~ 745.5	~~75~~ 58	~~1.26~~ 0.49
Super Compliant Metalworking Fluids ~~Low-VOC Metal Working Fluids~~	1,339.7	25	0.38
Heavy Naphthenic-based Oil	727.0	25	0.21
Light Naphthenic-based Oil	~~48.9~~ 128.4	718	~~0.40~~ 1.05
Vanishing Oil	64.1	50	~~0.04~~ 0.02
Metal Protecting Fluids ~~Rust Inhibitors~~	140.1	50	~~0.08~~ 0.09
Military Specified Preservatives	15.6	660	~~0.12~~ 0.01
Solvent	167.0	50	~~0.10~~ 0.08
Total	4,119.5	N/A	~~2.60~~ 2.58

*Excludes direct-contact lubricants
**Excludes light oil and vanishing oil

COMPLIANCE

The proposed amended rule would establish a VOC limit of 130 grams per liter of material for metalworking fluids effective January 1, 2012. Nearly 90 percent of metalworking fluids already in use today are expected to meet the proposed limit. Annually, more than two million gallons of soluble, semi-synthetic and synthetic metalworking fluids are used that have low VOC contents according to the applicable test methods. The remaining fluids are light, naphthenic oils based metalworking fluids with viscosities lower than five centistokes at 40 degrees Celsius. Light oils are used as blending materials along with much higher viscosity lubricants (greater than 38 centistokes at 40 degrees Celsius) to form a medium viscosity metalworking fluid (10 centistokes at 40 degrees Celsius). Light oils are used in older high speed spindle machines and as metalworking fluids for aluminum cutting applications. Newer spindle machines use heavily water-diluted products and are designed to be resistant to water. According to industry stakeholders, the light oils were used in the blend because the medium oils were more expensive at the time. Decreased demand for medium oils, because replacement of medium oils in electric transformers unrelated to Rule 1144 and PAR 1144, has leveled the prices and formulators can now eliminate the light oils without impacting costs.

Direct-contact lubricants differ from general lubricants in that the lubricants freely mix with metalworking fluids during the manufacturing process. Direct-contact lubricants have traditionally been formulated with heavier petroleum oils or water soluble, semi-synthetic and

synthetic compounds with relatively low VOC content. Because direct-contact lubricants that meet the proposed amended rule limit are currently used, reformulation is not expected to be required to reduce emissions~~; however, it is possible that operators would move to more water-dilutable or vegetable-based lubricants~~.

Future limits are proposed to reduce the metalworking fluid and direct-contact lubricant limits. ~~The final VOC content limit would become 50 grams per liter, effective January 1, 2015. This~~ These limits would require that owner/operators that use metalworking fluids ~~would~~ to transition from lighter naphthenic oils to ~~paraffinic or synthetic~~ heavier naphthenic oils as the base material. In some cases the transition would be a simple substitution. Many ~~paraffinic and synthetic~~ PAR 1144 compliant direct-contact lubricants and metalworking fluids are available and in use today. ~~Paraffinic base material costs approximately ten percent more than a naphthenic base material and in many cases the current practice of using naphthenic oils may strictly be based on cost. The market share of direct-contact lubricants and metalworking fluids that meet the proposed final VOC limit is approximately 44 percent.~~

~~However, substantial obstacles may need to be overcome to completely transition away from naphthenic oils. Some fluids are specifically formulated for a particular operation and may contain a complex blend of additives. As some additives are not readily soluble in paraffinic oils, substantial reformulation may be necessary. Overall performance is unlikely to be impacted by the use of paraffinic oils compared to naphthenic oil as paraffinic oils provide better lubricity, greater oxidation resistance, more water resistance and better compatibility with machinery and parts. However, in some cases a loss of a key additive because of its insolubility in paraffinic oil could adversely impact desired performance. The types of parts impacted by this proposal are typically high value parts made from aluminum, stainless steel, copper, brass, and titanium. Therefore, three additional years, until January 1, 2015, are provided to allow for reformulation, testing and further market penetration of the paraffinic and synthetic oils.~~

PAR 1144 would create two new sub-categories from the rust inhibitor category, military specified rust preservatives and general metal protecting metalworking fluids ~~rust inhibitors~~. The general metal protecting ~~rust inhibitor~~ category would continue to be subject to the existing rust inhibitor VOC content requirements then drop to 50 grams per liter, effective January 1, 2012. The new military specified preservative category would be subject to a new limit of 340 grams per liter effective January 1, 2011. The proposed limit would be consistent with Mil-PRF-16173E Class II for solvent cutback corrosion preventatives on military equipment. The higher limit would be restricted to military applications qualified under a military specification. Four of the six manufacturers who provide military specified rust preservatives offer products with VOC content below the proposed 340 grams per liter limit. This proposed limit would forgo previously expected emission reductions of 0.06 tons (120 pounds) per day.

Test Methods and Procedures

The existing rule requires that either U.S. EPA Reference Method 24 (Method 24) or the equivalent SCAQMD Method 303 (Determination of Exempt Compounds), be used to estimate the VOC content of affected fluids. During rule development, it was determined that the methods could not provide reliable and reproducible results for many direct-contact lubricants and metalworking fluids, because they are largely comprised of semi-volatile constituents.

Subsequent to the release of the Draft EA for PAR 1144, ASTM E1868 – 10 Standard Test Method for Loss-On-Drying by Thermogravimetry tested at 81 degrees Celsius for 110 minutes was submitted for approval by ASTM International. If approved, this test method would be required to be used to determine VOC content in PAR 1144. Otherwise, SCAQMD Method 319-10 Determination of Volatile Organic Compound (VOC) in Metalworking Fluids and Lubricants by Thermogravimetry would be used.

~~ASTM E1868 – 09 Standard Test Method for Loss-On-Drying by Thermogravimetry was developed by the California Department of Pesticide Regulation (DPR) for pesticides which primarily consist of paraffinic oils to address the semi-volatile nature of the oils. Their method requires the sample to be held at 115 degrees Celsius for 60 minutes.~~

~~The DPR method was tested on naphthenic oils but the oils did not stabilize at 115 degrees Celsius. The extended test was performed but the results differed significantly from the short term test. Additionally, manufacturers felt that an 11-hour test would be cost-prohibitive. In response, the Independent Lubricant Manufacturers Association (ILMA), in cooperation with District staff, developed the TGA method as a more reasonable alternative with temperature and duration parameters that would replicate the results from a six-month evaporation test.~~

~~An alternative method is SCAQMD Method 313L – Determination of VOC Hydrocarbon Compounds in Lubricants uses a gas chromatograph (GC) equipped with a flame ionization detector (FID). A liquid sample is injected into the GC/FID and the concentrations of the individual compounds that elute prior to methyl palmitate are summed. This method is currently undergoing validation testing and may be included at a later date~~.

CHAPTER 2 - ENVIRONMENTAL CHECKLIST

Introduction

General Information

Environmental Factors Potentially Affected

Determination

Environmental Checklist and Discussion

INTRODUCTION

The environmental checklist provides a standard evaluation tool to identify a project's potential adverse environmental impacts. This checklist identifies and evaluates potential adverse environmental impacts that may be created by the proposed project.

GENERAL INFORMATION

Project Title:	~~Draft~~ Final Environmental Assessment (EA) for Proposed Amended Rule (PAR) 1144 ~~Vanishing Oils~~ Metalworking Fluids~~,~~ and Direct-Contact Lubricants, ~~Metal Working Fluids and Rust Inhibitors~~
Lead Agency Name:	South Coast Air Quality Management District
Lead Agency Address:	21865 Copley Drive Diamond Bar, CA 91765
CEQA Contact Person:	Mr. James Koizumi (909) 396-3234
PAR 1144 Contact Person	Mr. Michael Morris (909) 396-3282
Project Sponsor's Name:	South Coast Air Quality Management District
Project Sponsor's Address:	21865 Copley Drive Diamond Bar, CA 91765
General Plan Designation:	Not applicable
Zoning:	Not applicable
Description of Project:	Adoption of PAR 1144 would fully implement the 2007 AQMP control measure CTS-01 – Emission Reductions from Lubricants. The proposed amended rule would accomplish this by adding VOC content limits for ~~two~~ new metalworking fluid sub-categories: metal forming, metal removal, metal treating; and direct-contact lubricants ~~and metal working fluids~~; creating two new sub-sub-categories for the ~~rust inhibitor~~ metal protecting metalworking sub-category (general and military specified preservative) with new a VOC content limit for military specified preservatives; requiring record keeping of affected metalworking fluids and revising the test method used to determine VOC content.
Surrounding Land Uses and Setting:	Not applicable
Other Public Agencies Whose Approval is Required:	Not applicable

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The following environmental impact areas have been assessed to determine their potential to be affected by the proposed project. As indicated by the checklist on the following pages, environmental topics marked with an "✓" may be adversely affected by the proposed project. An explanation relative to the determination of impacts can be found following the checklist for each area.

☐ Aesthetics	☐ Agriculture Resources	☑ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Energy
☐ Geology/Soils	☑ Hazards & Hazardous Materials	☑ Hydrology/ Water Quality
☐ Land Use/Planning	☐ Mineral Resources	☐ Noise
☐ Population/Housing	☐ Public Services	☐ Recreation
☐ Solid/Hazardous Waste	☐ Transportation/ Traffic	☑ Mandatory Findings of Significance

DETERMINATION

On the basis of this initial evaluation:

☑ I find the proposed project, in accordance with those findings made pursuant to CEQA Guideline §15252, COULD NOT have a significant effect on the environment, and that an ENVIRONMENTAL ASSESSMENT with no significant impacts will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will NOT be significant effects in this case because revisions in the project have been made by or agreed to by the project proponent. An ENVIRONMENTAL ASSESSMENT with no significant impacts will be prepared.

☐ I find that the proposed project MAY have a significant effect(s) on the environment, and an ENVIRONMENTAL ASSESSMENT will be prepared.

☐ I find that the proposed project MAY have a "potentially significant impact" on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL ASSESSMENT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier ENVIRONMENTAL ASSESSMENT pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL ASSESSMENT, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Date: February 12, 2010 **Signature:** Steve Smith

Steve Smith, Ph.D.
Program Supervisor

ENVIRONMENTAL CHECKLIST AND DISCUSSION

As discussed in Chapter 1, the objectives of PAR 1144 are to implement the 2007 AQMP control measure CTS-01 – Emission Reductions from Lubricants and further reduce VOC emissions from these products. The proposed amended rule would accomplish these objectives by adding VOC content limits for ~~two~~ new metalworking fluid sub-categories: metal forming, metal removal, metal treating; and direct-contact lubricants ~~and metal working fluids~~; creating two new sub-sub-categories for the ~~rust inhibitor~~ metal protecting metalworking sub-category (general and military specified preservative) with a new VOC content limit for military specified preservatives; requiring record keeping of affected metalworking fluids and revising the test method used to determine VOC content. The proposed amended rule would affect metalworking operators that use direct-contact lubricants~~,~~ and metalworking fluids ~~and rust inhibitors~~ during manufacturing and assembly operations.

PAR 1144 would affect the direct-contact lubricant category, naphthenic oils, and military specified preservatives:

- Direct-contact lubricants are metalworking fluids that come into contact with parts during the manufacturing process. Traditionally, direct-contact fluids been formulated with heavier petroleum oils or water soluble, semi-synthetic and synthetic compounds with relatively low VOC content. Because compliant direct-contact lubricants are currently used and the sales weighted average VOC content is currently at 25 grams per liter, owners/operators are not expected to reformulate to meet the ~~interim~~ VOC content limit of ~~70~~ 50 grams per liter. ~~SCAQMD staff expects that owners/operators would need to use reformulated or replacement direct contact lubricants to meet the final VOC content limit of 50 grams per liter.~~
- The reduction in metalworking fluid VOC content is expected to affect naphthenic oils. Light oils are low viscosity naphthenic oils used in older high speed spindle machines and as metalworking fluids for aluminum cutting applications. Newer spindle machines use heavily water-diluted products and are designed to be resistant to water. To meet the January 1, 2012, ~~interim~~ VOC content limits of ~~70~~ 75 grams per liter for metal forming, general metal removal and metal treating or 130 gram per liter for precision metal removal, SCAQMD staff expects owners/operators to switch from 40 (Saybolt Universal Seconds) SUS naphthenic oil to 60 SUS naphthenic oil. ~~To meet the January 1, 2015, final VOC content limit of 50 grams per liter all metal working naphthenic oils are expected to be replaced with paraffinic oils, water-dilutable oils or vegetable-based oils. Paraffinic oils provide better lubricity, greater oxidation resistance, more water resistance and better compatibility with machinery and parts. Some niche metal working operations may move to water-dilutable or vegetable-based oils because they cost less than paraffinic oils.~~
- A new military specified rust preservatives sub-sub-category would be created ~~in the rust inhibitor~~ for the metal protecting metalworking fluid sub-category and a new VOC content limit of 340 grams per liter would be established for it. Military specified rust preservatives at the proposed VOC limit are currently in use.

PAR 1144 is expected to result in facility owners/operators ~~initially~~ replacing light naphthenic oils with heavier naphthenic oils in metal working fluids~~; and then replacing direct-contact lubricants and naphthenic oils with paraffinic oils, water-dilutable oils or vegetable oils to~~ comply with VOC content limits. ~~Some replacement is expected to be simple replacement. Other products may require reformulation~~. Heavy and light naphthenic oils are manufactured at the same refinery in Bakersfield, so replacing light naphthenic oils with heavy naphthenic oils in

metalworking fluids would not result in a change in mode, frequency or length of transportation. Based on the sales weighted average VOC content, it is expected that metalworking facility owners/operators that do not use naphthenic oil based products would be able to comply with PAR 1144 using existing metalworking fluids and direct-contact lubricants. Therefore, all transportation related adverse impacts reported in the draft EA would no longer be expected to occur.

Based on discussions with industry, staff expects that replacement and reformulated oils would be compatible with existing metalworking processes. Therefore, no additional construction or equipment replacement is expected.

PAR 1144 includes an exemption that would allow the use of DMC as a cooling solvent in computerized numerically controlled (CNC) machines where permeable media are used to maintain a vacuum that holds the part in place during cutting , because the company that has a CNC machine stated that dimethyl carbonate was the only solvent found that can replace the currently used denatured ethyl alcohol and meet both the VOC limits under PAR 1144 and performance requirements needed by facility operators. No other facilities were identified that use a CNC machine where permeable media are used to maintain a vacuum that holds the part in place during cutting. Since the exemption applies only to affected CNC machines that exist at the date of adoption of PAR 1144, the exemption would not apply to new CNC machines.

A comment letter was received on this exemption that was concerned about health risk to on-site workers, because the CNC machine is currently vented into the room where it is housed. The commenter asked that health risks to the workers be analyzed. Health risks to occupational workers could not be directly analyzed, because occupational health values have not been published by a regulatory agency. Therefore, to address this issue the exemption was modified to require that CNC machines must be enclosed with an exhaust fan that discharges the exhaust air from the equipment out of the building.

SCAQMD staff is only aware of one facility that has a CNC machine where permeable media are used to maintain a vacuum that holds the part in place during cutting. Because of the capital cost of this type of CNC machines, it is not believed that another such machine would be installed either at the affected facility or at any other facility. Based on discussions with facility operators DMC would be a one to one replacement for the denatured alcohol that is currently used at the facility. The facility operator has stated that the CNC machine would be exhausted to the exterior of the building. Diesel construction equipment is not expected to be used to duct the CNC machine to the outside. The DMC would be provided by the same company that currently supplies denatured alcohol to the affected facility.

Labeling, recordkeeping and test method requirements are not expected to adversely affect any environmental topic.

		Potentially Significant Impact	Less Than Significant Impact	No Impact
II)	**AESTHETICS.** Would the project:			
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☑
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☑
c)	Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☑
d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☑

Significance Criteria

The proposed project impacts on aesthetics will be considered significant if:

- The project will block views from a scenic highway or corridor.
- The project will adversely affect the visual continuity of the surrounding area.
- The impacts on light and glare will be considered significant if the project adds lighting which would add glare to residential areas or sensitive receptors.

Discussion

I.a), b), c) & d) PAR 1144 would not require any new development or require modifications to buildings or other structures to comply with the proposed VOC content limits for direct-contact lubricants~~,~~ and metalworking fluids ~~and rust inhibitors~~. It is expected that PAR 1144 would not change existing operations except that different types of metalworking fluids would be used. Further, since all of the affected activities occur within existing structures, there would be no change to the visual character of the existing setting at any of the 7,000 existing affected facilities. For the same reason, PAR 1144 is not expected to adversely affect scenic vistas or substantially damage scenic resources.

Additional light or glare would not be created which would adversely affect day or nighttime views in the area since no light generating equipment would be required to comply with the VOC content requirements of the proposed amended rule. Similarly, the proposed amended rule does not require nighttime activities at affected facilities.

Based upon these considerations, significant adverse aesthetics impacts are not anticipated and will not be further analyzed in this ~~Draft~~ Final EA. Since no significant adverse aesthetics impacts were identified, no mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant Impact	No Impact
II)	**AGRICULTURE RESOURCES.** Would the project:			
a)	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☑
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☑
c)	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☑

Significance Criteria

Project-related impacts on agricultural resources will be considered significant if any of the following conditions are met:
- The proposed project conflicts with existing zoning or agricultural use or Williamson Act contracts.
- The proposed project will convert prime farmland, unique farmland or farmland of statewide importance as shown on the maps prepared pursuant to the farmland mapping and monitoring program of the California Resources Agency, to non-agricultural use.
- The proposed project would involve changes in the existing environment, which due to their location or nature, could result in conversion of farmland to non-agricultural uses.

II.a), b), & c) PAR 1144 would not require any new development or require modifications to buildings or other structures to comply with the proposed VOC content limits for direct-contact lubricants~~,~~ and metalworking fluids~~ and rust inhibitors~~. All of the affected operations occur within existing structures, so new land use designations, including agricultural designations, are not expected to be altered by the proposed project. Therefore, since PAR 1144 affects operations at 7,000 existing facilities located only in commercial or industrial areas, it is not expected to convert any classification of farmland to non-agricultural use or conflict with zoning for agricultural use or a Williamson Act contract.

Based upon these considerations, significant agricultural resource impacts are not anticipated and will not be further analyzed in this ~~Draft~~ Final EA. Since no significant adverse agriculture resources impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
III. AIR QUALITY. Would the project:			
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☑
b) Violate any air quality standard or contribute to an existing or projected air quality violation?	☐	☑	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☐	☑	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☑	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☑	☐
f) Diminish an existing air quality rule or future compliance requirement resulting in a significant increase in air pollutant(s)?	☐	☑	☐

III.a) PAR 1144 would fully implement 2007 AQMP control measure CTS-01 – Emission Reductions from Lubricants. The proposed amended rule would accomplish these objectives by adding VOC content limits for two new metalworking fluid categories: direct-contact lubricants and metalworking fluids; creating two new subcategories to the rust inhibitor category (general and military specified preservative) with a new VOC content limit for military specified preservatives; requiring record keeping of affected metalworking fluids and revising the test method used to determine VOC content. Since PAR 1144 would fully implement 2007 AQMP control measure CTS-01, it would not conflict with or obstruct implementation of the applicable air quality control plan.

III. b), c), and f) For a discussion of these items, refer to the following analysis.

Air Quality Significance Criteria

Attainment of the state and federal ambient air quality standards protects sensitive receptors and the public in general from the adverse effects of criteria pollutants, which are known to have adverse human health effects. ~~Evaluation of the proposed project indicates that it could generate adverse air quality impacts not only in the district, but also in the Bay Area Air Quality Management District (BAAQMD), Kern County Air Pollution Control District (KCAPCD), Monterrey Bay Unified Air Pollution Control District (MBUAPCD), Mojave Desert Air Basin (MDAB), Santa Barbara County Air Pollution Control District (SBCAPCD), San Luis Obispo~~

~~County Air Pollution Control District (SBCAPCD), San Joaquin Valley Air Pollution Control District (SJVAPCD) and Ventura County Air Pollution Control District (VCAPCD). For this reason, air quality significance criteria used by SCAQMD and other affected air districts are provided.~~ To determine whether or not air quality impacts from adopting and implementing the proposed amendments are significant, impacts are evaluated and compared to the criteria listed in Tables 2-1 for the district ~~and 2-2 for other air districts~~. The project would be considered to have significant adverse air quality impacts if any one of the thresholds in Tables 2-1 ~~or 2-2~~ are equaled or exceeded.

Table 2-1
SCAQMD Air Quality Significance Thresholds

Mass Daily Thresholds		
Pollutant	**Construction**	**Operation**
NOx	100 lb/day	55 lb/day
VOC	75 lb/day	55 lb/day
PM10	150 lb/day	150 lb/day
PM2.5	55 lb/day	55 lb/day
SOx	150 lb/day	150 lb/day
CO	550 lb/day	550 lb/day
Lead	3 lb/day	3 lb/day
Toxic Air Contaminants (TACs) and Odor Thresholds		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
Ambient Air Quality for Criteria Pollutants [a]		
NO2 1-hour average annual average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.10 ppm (federal) 0.03 ppm (state)	
PM10 24-hour average annual geometric average annual arithmetic mean	10.4 μg/m^3 (recommended for construction) [b] & 2.5 μg/m^3 (operation) 1.0 μg/m^3 20 μg/m^3	
Sulfate 24-hour average	1 ug/m^3	
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) 9.0 ppm (state/federal)	

[a] Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.

[b] Ambient air quality threshold based on SCAQMD Rule 403.

KEY: lb/day = pounds per day ppm = parts per million ug/m^3 = microgram per cubic meter ≥ greater than or equal to

Table 2-2
Other Air District Operational Air Quality Significance Thresholds

	BAAQMD		KCAPCD		MBUAPCD		MDAQMD		SBCAPCD		SJVAPCD		SLOCAPCD		VCAPCD	
Pollutant	Significance Threshold															
-	Max. Daily (lb/day)	Annual (ton/yr)	Max. Daily (lb/day)	Annual (ton/yr)	Max. Daily (lb/day)	Annual (ton/yr)	Max Daily (lb/day)	Annual (ton/yr)	Max. Daily (lb/day)	Annual (ton/yr)	Max. Daily (lb/day)	Annual (ton/yr)	Max. Daily (lb/day)	Annual (ton/yr)	Max. Daily (lb/day)	Annual (ton/yr)
ROG	80	15	N/A	25	137	N/A	137	25	240	N/A	N/A	10	25*	25	25	N/A
NOx	80	15	N/A	25	137	N/A	137	25	240	N/A	N/A	10	25*	25	25	N/A
SOx	N/A		N/A	27	150	N/A	137	25	N/A		0.04 ppm (24-hour avg.); 0.25 ppm (1-hour average)		N/A		N/A	
PM10	80	15	N/A	15	82	N/A	82	15	80	N/A	N/A		25	25	N/A	
PM2.5	none		N/A		N/A		82	15	N/A		N/A		N/A**	N/A	N/A	
CO	9.0 ppm (8-hour average); 20.0 ppm (1-hour average)		N/A		550	N/A	548	100	none		9.0 ppm (8-hour average); 20.0 ppm (1-hour average)		550	N/A	9.0 ppm (8-hour average); 20.0 ppm (1-hour average)	
TAC	Cancer Risk > 10 in a million; Non-Cancer Hazard Index > 1.0															

* Significance threshold is based on ROG and NOx combined value.
** Diesel Particulate Matter- Maximum Daily 1.25 lb/day.

KEY: lb/day = pounds per day ton/yr = tons per year ppm = parts per million

Air Quality Impacts

Construction Emissions

With the exception of the replacement of denatured alcohol with DMC at a single facility, ~~C~~compliance with PAR 1144 is expected to be achieved by existing, or replacement solvents or reformulation of solvents within the affected direct-contact lubricants~~,~~ and metalworking fluids ~~and rust inhibitors~~. Based on discussions with industry, SCAQMD staff expects that replacement and reformulated oils would be compatible with existing metalworking processes and can be used as "drop-in" replacements. ~~No~~ With the exception of the facility where DMC would be used, no modification of equipment requiring construction expected to be necessary for owners/operators to use replacement or reformulated direct-contact lubricants, metalworking fluids and rust inhibitors.

The exemption for DMC usage would require that the facility operators at the affected facility duct the CNC machine to outside the facility. The CNC machine would be ducted to a nearby duct at the facility. Construction related to ducting the CNC machine to the outside is not expected to require any diesel construction equipment. Therefore, no additional construction emissions are expected from the facility than would be generated by existing routine maintenance.

As explained in the following subsection construction emissions related to installing control equipment are not anticipated because control equipment are not expected to be used to comply with PAR 1144. Therefore, no adverse construction air quality impacts are expected from PAR 1144.

Operational Emissions

Control equipment, such as thermal oxidizers or carbon adsorption, can be used to control VOC emissions under Rule 1144. No control equipment was installed to comply with the existing Rule 1144, because of cost considerations. Control equipment could also be used to meet the new requirements of PAR 1144. However, since the cost to replace or reformulate metalworking fluids is similar to the costs of existing metalworking fluids or direct-contact lubricants and no control equipment was installed to comply with Rule 1144~~1114~~; no control equipment is expected to be installed to comply with PAR 1144. Since the increased use of control equipment is considered unlikely, it is expected that there would be no emissions from use of control equipment to comply with PAR 1144.

VOC Emission Reductions

The current Rule 1144 has reduced VOC emissions by two tons per year from lubricants, low-VOC metalworking fluids, and vanishing oils. An additional 0.71 ton per year was expected to be reduced by January 1, 2012 from rust inhibitors.

PAR 1144 would establish new categories and VOC limits for direct-contact lubricants and metalworking fluids. It would also create two sub-sub-categories for metal protecting fluids ~~rust inhibitors~~: military specified preservatives and a general category for all other ~~rust inhibitors~~ metal protecting fluids (i.e., ~~rust inhibitors~~ metal protecting fluids that are not military specified preservatives). A new VOC limit would be established for the military specified preservatives sub-sub-category. The VOC limits for the general ~~rust inhibitors~~ metal protecting fluid category would remain the same as those in the existing rule for ~~rust inhibitors~~ metal protecting fluids.

Table 2-2 ~~3~~ presents metalworking fluid categories, volumes surveyed, sales weighted average VOC content (existing VOC content), proposed VOC content, percent reduction in VOC content, VOC emissions inventory and VOC emission reductions expected for the affected metalworking fluid categories.

Direct-contact Lubricants

The direct-contact lubricant category is currently unregulated. The proposed amended rule would establish an ~~interim~~ VOC content limit of ~~70~~ 50 grams per liter for direct-contact lubricants effective January 1, 2012. ~~Most products currently comply with the interim limit. No~~ Since the sales weight average VOC content limit is 25 grams per liter, no reformulation or replacement of direct-contact lubrications are expected to be needed to meet the ~~interim~~ VOC content limit. Therefore, no VOC emissions reductions are expected from direct-contact lubricants. ~~Compliance with final VOC content limit of 50 grams per liter, effective January 1, 2015, is also expected to be met by using existing direct-contact lubricants. Although there are direct-contact lubricant available that currently comply with the 2015 VOC content limit, some owners/operators that do not currently use future compliant materials are expected to need to reformulate or replace their existing direct-content lubricants. The new direct-contact lubricant VOC content limit is expected to result in a VOC emissions reduction of 0.02 tons per day, which is 40 pounds per day.~~

Metalworking Fluids

Metalworking fluids other than vanishing oil and ~~rust inhibitors~~ metal protecting metalworking fluids are not currently regulated. Metalworking fluids are comprised of four sub-categories: metal forming, metal removal, metal treating and metal protecting. The metal removal sub-category is further divided into general and precision removal sub-sub-categories. PAR 1144 would establish a VOC content limit of 75 grams per liter for metal forming, general metal removal and metal treating. The proposed amended rule would establish a~~n interim~~ VOC content limit of 130 grams per liter effective January 1, 2012 for the precision metal removal sub-sub-category. Most products currently comply with the ~~interim~~ metalworking VOC content limits. Light naphthenic oils (40 SUS) are expected to be replaced with 60 SUS naphthenic oils to comply with the ~~interim~~ VOC content limit. ~~Compliance with the final VOC content limit of 50 grams per liter, effective January 1, 2015, is expected to be met by reformulated or replacement oils (paraffinic oil, water-dilutable oil or vegetable oil). Water-dilutable oils or vegetable-based oils are preferred by owners/operators because they cost less than paraffinic oils; however, paraffinic oil could likely be used because it provides better performance than water-dilutable and vegetable-based oils.~~ The new metalworking fluids VOC content limit ~~is~~ are expected to result in a VOC emissions reduction of ~~0.79~~ 0.91 ton per day (~~0.42 ton from replacing naphthenic metal working fluids and 0.37 ton from light naphthenic oils~~ 0.57 ton per day from replacing light with heavy naphthenic oil-based metalworking fluids and 0.34 from replacing light with heavy naphthenic oil-based precision metal removal fluids) per day, which is ~~1,580~~ 1,820 pounds per day.

Metal Protecting Metalworking Fluids ~~Rust Inhibitors~~

~~Rust inhibitors~~ Metal protecting fluids are currently regulated by Rule 1144. Rule 1144 established an interim VOC content limit for all ~~rust inhibitors~~ metal protecting fluids at 300 grams per liter. Rule 1144 included an exemption for rust inhibitors used in association with a military specification, military standard, Department of Defense document or Production Part Approval Process (PPAP) until January 1, 2011. Compliant military specified preservatives have

not been identified that can meet the existing rust inhibitor VOC content limit of 300 grams per liter. PAR 1144 would establish a new ~~rust inhibitors~~ metal protecting fluids subcategory for military preservatives with a VOC content limit of 340 grams per liter. Four of the six manufacturers who provide military specified rust preservatives offer products with VOC content below the proposed 340 gram per liter limit. SCAQMD staff believes that owners/operators would use existing military specified rust preservatives to comply with the proposed VOC content limit. The proposed VOC content limit would forgo previously expected VOC emission reductions of ~~120~~ 100 pounds (~~0.06~~ 0.05 ton) per day.

The existing VOC content limit for all other ~~rust inhibitors~~ metal protecting fluids (i.e., non-military specified rust preservatives) would remain the same as presented in the existing rule (300 grams per liter currently, 50 grams per liter January 1, ~~2015~~ 2012).

The proposed future VOC content limits would overall reduce VOC emissions by ~~0.75~~ 0.86 tons per day, which is ~~1,500~~ 1,720 pounds per day (see Table 2-~~23~~) that would benefit air quality. Table 2-~~23~~ also includes the VOC emission reductions foregone from establishing the new military specified preservative with a higher VOC content limit than it was subject to when it was under the previous rust inhibitor category; however, the foregone emissions would be offset by the emission reductions.

Secondary Criteria Pollutant Emissions

~~Secondary criteria pollutant emissions would be generated by the delivery of direct-contact lubricants, metal working fluids and rust inhibitors. The incremental change in criteria pollutant emissions were estimated from transport of direct-contact lubricants, metal working fluids and rust inhibitors in each affected air district and compared the CEQA thresholds associated with each air district.~~ Light naphthenic oil-based metalworking fluids would need to be reformulated or replaced with heavy naphthenic oil-based metalworking fluids. No other reformulation or replacement is expected. Since heavy and light naphthenic oils are supplied by the same refinery in Bakersfield, California, no secondary criteria pollutant emissions from transportion are expected.

Direct-contact Lubricants

~~The proposed amended rule would establish an interim VOC content limit of 70 grams per liter for direct-contact lubricants effective January 1, 2012. Most products currently comply with the interim limit. No reformulation or replacement of direct-contact lubrications is expected to be needed to meet the interim VOC content limit. The existing direct-contact lubricants are manufactured in the Midwest and delivered by rail.~~ Direct-contact lubricants that meet the PAR 1144 VOC content limits are available. Since the sales weighted average VOC content for direct-contact lubricants is 25 grams per liter, reformulation or replacement is not required and that existing compliant lubricants would be used to comply with PAR 1144. Therefore, no secondary criteria emissions are expected to comply with direct-contact lubricant requirements in PAR 1144.

Table 2-2 ~~3~~
Emission Reductions Effective 2015

Metalworking Fluid Type	Volume Surveyed (thousand gallons)	Sales Weighted Ave VOC Content (grams per liter)	Proposed VOC Content	Percent Reduction	Total VOC Emission Inventory (tons per day)	Total VOC Emission Reduction (tons per day)
Direct-contact lubricants	211.1	60	50	~~17~~ 0	~~0.14~~ 0	~~0.02~~ 0
Light Naphthenic-Oil based Metalworking Fluids	~~1,472~~ 78.4	~~75~~ 718	~~50~~ 75	~~33~~ 88	~~1.26~~ 0.64	~~0.42~~ 0.57
Light Naphthenic-Oil – Precision Metal Removal	~~48.9~~ 50.0	718	~~50~~ 130	~~93~~ 82	~~0.40~~ 0.41	~~0.37~~ 0.34
Military Specified Preservatives	15.6	~~660~~ 340	340*	N/A	~~0.12~~ 0.01	~~-0.06~~ -0.05
Total	4,120	N/A	N/A		1.92	~~0.75~~ 0.86

*Previous limit was 50 grams per liter.

~~Compliance with final VOC content limit of 50 grams per liter, effective January 1, 2015, is also expected to be met by using existing direct-contact lubricants. Although there are direct-contact lubricant available that currently comply with the 2015 VOC content limit, some owners/operators that do not currently use future compliant materials are expected to need to reformulate or replace their existing direct-content lubricants. Proposed project reformulated or replacement direct-contact lubricants are expected to be water-dilutable, vegetable-based or paraffinic-based. Water-dilutable lubricants are concentrated (i.e., water would be added at the metal working facility to dilute the concentrated lubricant before use) and, therefore; would be shipped in smaller quantities than existing lubricants. Water-dilutable and vegetable-based lubricants are expected to be supplied from the Midwest. Paraffinic-based lubricants are expected to be supplied from Texas or Richmond, California. All reformulated or replacement lubricants are expected to be delivered by rail. Since the reformulated or replacement lubricants would be supplied from suppliers that are either equidistant or nearer than existing suppliers and in lower volumes, secondary emissions from delivery of reformulated or replacement lubricants are expected to be less than existing secondary criteria pollutant emissions. These criteria pollutant emissions reductions were not quantified for this analysis.~~

Metal Protecting Fluids ~~Rust Inhibitor~~

PAR 1144 would establish a new VOC content limit for military specified preservatives effective January 1, 2012. Since existing military specified preservatives already comply with this proposed VOC content limit are available and in use, no change in mode, distance or frequency

of transportation of rust inhibitors are expected. Therefore, no additional secondary criteria pollutant emissions from rust inhibitors are expected from PAR 1144.

General Metalworking Fluids

Existing naphthenic oil (light oil and general naphthenic based working fluid) is shipped primarily by diesel truck from Bakersfield. It was assumed that 10 percent of existing naphthenic oils are shipped by rail and 90 percent are shipped by diesel truck.

All naphthenic oil metalworking fluids, except for light naphthenic oil (40 SUS) metalworking fluids, are expected to already comply with the ~~interim~~ metalworking fluid VOC content limits of 75 and 130 grams per liter. To comply with the ~~interim~~ metalworking fluid VOC content limits, light naphthenic oil metalworking fluid users are expected to replace light naphthenic oils with medium naphthenic oils (60 SUS). The 40 SUS and 60 SUS naphthenic oil are produced at the same facility in Bakersfield. Therefore, no changes in mode, length or frequency of transportation are expected (i.e., no change in secondary emissions from transportation of naphthenic oil).

DMC and the currently used denatured alcohol are provided by the same supplier. Therefore, there would be no change secondary criteria emissions from the delivery of DMC.

~~To comply with the final metal working fluid VOC content limit of 50 grams per liter, all metal working fluid naphthenic oil users are expected to need reformulated products or replace to naphthenic oils in metal working fluids with other types of compliant products. Water-dilutable and vegetable-based oils are expected to be preferred because they are cost less than paraffinic oils. SCAQMD staff estimates that approximately 30 percent of naphthenic oils may be replaced by water-dilutable (20 percent) or vegetable-based (10 percent) metal working fluids. Water-dilutable oils would be shipped by rail from Cleveland, Ohio. Vegetable oils would be shipped by rail from Des Moines, Iowa. Water-dilutable lubricants are concentrated (i.e., water would be added at the metal working facility to dilute the concentrated lubricant before use) and, therefore; would be shipped in smaller quantities that existing lubricants. Based on a review of technical data sheets, it was assumed that water-dilutable oils and vegetable-based oils would be 20 percent the volume of existing products. The remaining 70 percent of naphthenic oils are expected to be replaced by paraffinic oils because they provide better performance then water-dilutable and vegetable-based oils. The replacement paraffinic oil would be shipped by rail from Richmond, California or Texas. Based on cost, it was assumed that 30 percent of the paraffinic oil would be shipped from Texas and 70 percent would be shipped from Richmond, California. Rail from Richmond, California would be expected to travel along one of three routes: the Union Pacific US-101 route, the Union Pacific SR-99 route or the Burlington Northern Santa Fe SR-99 route. The Union Pacific US-101 route travels along the US-101. Both the Union Pacific SR-99 route and the Burlington Northern Santa Fe SR-99 route travel along the SR-99 from northern California to Bakersfield, from Bakersfield to Barstow, then from Barstow along the I-15 and I-10 through the district. Rail from out of state (Texas, Iowa and Ohio) would be expected to travel from Arizona through San Bernardino, CA.~~

~~*SCAQMD Secondary Criteria Pollutant Emissions from Metal Working Fluids*~~

~~Existing criteria pollutant emissions from truck travel of existing naphthenic oil based metal working fluid were estimated using Burden emission factors from the EMFAC2007 model. Diesel trucks travel from Bakersfield along the SR-99 and I-5. Rail cars would travel from~~

~~Bakersfield to Barstow, then along the I-15 and I-10. In addition, because truck and rail transport covers a number of different air districts or basins, transport emissions are quantified during travel in each air district or basin and the separate results for each district or basin are compared to the applicable significance thresholds in effect in each air district or basin.~~

~~The analysis of rail transport included the following assumptions. Given the low volumes of replacement solvents expected to be needed to comply with PAR 1144, it is assumed that all compliant products from the different locations could be transported in one railcar. Further, the rail car transporting compliant products would be attached to an existing train traveling to southern California. Therefore, rail emissions are the incremental emissions resulting from locomotives as a result of pulling a heavier load, i.e., one extra railcar.~~

~~Transport emissions in the district are based on the existing naphthenic oil volumes in Table 2-3 and weekly delivery, ten diesel trucks would travel from near Labec, California (the northern border of the district that crosses the I-5) through the district on a peak day. The peak day would also include one rail car traveling from Cajon along the I-15 and I-10.~~

~~Proposed project transport emissions in the district were also estimated from rail transportation of replacement solvents from Texas, Iowa and Ohio along the segment starting at the MDAB/SCAQMD border San Bernardino, California through the district. Proposed project emissions were estimated from rail transportation of replacement solvents from Richmond, California along one of three routes: the Union Pacific US-101 route, the Union Pacific SR-99 route or the Burlington Northern Santa Fe SR-99 route. The Union Pacific US-101 route would travel along the US-101 from near Westlake Village into the district. Both the Union Pacific SR-99 route and the Burlington Northern Santa Fe SR-99 route travel from Cajon along I-15 and I-10 through the district.~~

~~Two secondary criteria emissions scenarios were developed one where all rail cars from Richmond would travel along the Union Pacific US-101 route and another where all rail cars from Richmond would travel along either the Union Pacific SR-99 or the Burlington Northern Santa Fe SR-99 routes. Since all rail cars originate from the same refinery in Richmond, it was assumed that only one car per day would be need to transport compliant materials to the district. In both rail scenarios, it was also assumed that three rail cars would arrive from out of state: one from Texas, one from Iowa and one from Ohio. The Union Pacific SR-99/Burlington Northern Santa Fe SR-99 route scenario was used for peak day emissions because it generated greater emissions (see Appendix B).~~

~~The difference between the emissions from the existing transportation of naphthenic oil metal working fluid and the emissions from the transportation of replacement or reformulated metal working fluid were compared to the SCAQMD significance thresholds in Table 2-4. The difference between the secondary criteria pollutant emissions from transportation of existing fluid and the expected replacement/reformulated fluids within the SCAQMD are below the operational significance thresholds in Table 2-4. The paraffinic oil, water-dilutable and vegetable-based working fluid suppliers are further from the district than the naphthenic oil suppliers, but emissions from rail would be less than by diesel truck, because rail tankers are larger than truck tankers (resulting in fewer trips). Detailed operational criteria pollutant emission calculations can be found in Appendix B.~~

~~Table 2-4~~
~~Secondary Criteria Pollutant Operation Emissions in the District~~

~~Pollutant~~	~~CO lb/day~~	~~NOx lb/day~~	~~ROG lb/day~~	~~SOx lb/day~~	~~PM10 lb/day~~	~~PM2.5 lb/day~~
~~Existing Fluid Truck and Rail Transportation~~	~~8.21~~	~~28.2~~	~~2.14~~	~~0.076~~	~~1.27~~	~~1.13~~
~~Proposed Fluid Rail Transportation~~	~~3.35~~	~~19.8~~	~~1.10~~	~~0.24~~	~~0.59~~	~~0.57~~
~~Difference in Daily Secondary Emissions~~	~~-4.86~~	~~-8.40~~	~~-1.04~~	~~0.16~~	~~-0.68~~	~~-0.55~~
~~Operational Significance Threshold~~	~~550~~	~~55~~	~~55~~	~~150~~	~~150~~	~~150~~
~~Significant?~~	~~No~~	~~No~~	~~No~~	~~No~~	~~No~~	~~No~~

~~*Secondary Criteria Pollutant Emissions from Transport of Metal Working Fluids in Other Air Districts*~~
~~Secondary criteria emissions were estimated using EPA emission factors for locomotives. Existing emissions from naphthenic oil based metal working fluids transported from Bakersfield to Los Angeles by both rail and diesel truck were estimated. Proposed project emissions from rail transportation of replacement solvents from the segment in each air district were estimated for each rail route and compared to the CEQA thresholds in Table 2-2.~~

~~Two secondary criteria emissions scenarios were developed one where all rail cars from Richmond would travel along the Union Pacific US-101 route and another where all rail cars from Richmond would travel along either the Union Pacific SR-99 or the Burlington Northern Santa Fe SR-99. Since all rail cars originate from the same refinery in Richmond, it was assumed that only one car per day would be sent to the district. In both scenarios, it was also assumed that three rail cars would arrive from out of state: one from Texas, one from Iowa and one from Ohio. The Union Pacific SR-99/Burlington Northern Santa Fe SR-99 route scenario was used for peak day emissions for the KCAPCD and MDAQMD, because it generated larger secondary criteria emissions (see Appendix B) in those air districts. The Union Pacific US-101 route scenario was used for peak day emissions for the BAAQMD, MBUAPCD, SBCAPCD, SJVAPCD, SLOCAPCD and VACAPCD, because it generated greater secondary criteria emissions (see Appendix B) in those air districts. Tables 2-5 through 2-12 present the peak day and peak annual emissions in each air district and associated significance thresholds. Tables 2-5 and 2-12 show that all secondary emissions are below the significance thresholds for criteria pollutants in each associated air district.~~

Metalworking fluids contain oil, grease and trace amounts of metal that make them unsuitable for direct discharge into the sewer system, and which make them hazardous wastes. It is assumed that existing and proposed metalworking fluids would be disposed of as hazardous wastes at the same hazardous waste treatment sites (see Environmental Topic VIII. Hazardous and Hazardous Materials for further discussion). Since the same volume would be disposed of at the same hazardous waste treatment sites, there would be no increase in secondary emissions from hazardous waste disposal.

~~Table 2-5~~
~~Daily Secondary Criteria Pollutant Operation Emissions in the BAAQMD~~

~~Air District~~	~~Pollutant~~	~~Significance Thresholds~~		~~Operational Mass Emissions~~		~~Significant~~
	-	~~Maximum Daily (lb/day)~~	~~Annual (ton/yr)~~	~~Maximum Daily (lb/day)~~	~~Annual (ton/yr)~~	-
~~BAAQMD~~	~~ROG~~	~~80~~	~~15~~	~~0.18~~	~~0.002~~	~~No~~
	~~NOx~~	~~80~~	~~15~~	~~3.31~~	~~0.041~~	~~No~~
	~~PM10~~	~~80~~	~~15~~	~~0.1~~	~~0.001~~	~~No~~
	~~PM2.5~~	~~none~~	~~none~~	~~0.1~~	~~0.001~~	~~No~~
	~~CO~~	~~9.0 ppm (8-hour average); 20.0 ppm (1-hour average)~~		~~0.56~~	~~0.007~~	~~No~~

~~Table 2-6~~
~~Annual Secondary Criteria Pollutant Operation Emissions in the KCAPCD~~

~~Air District~~	~~Pollutant~~	~~Significance Thresholds~~		~~Operational Mass Emissions~~		~~Significant~~
	-	~~Maximum Daily (lb/day)~~	~~Annual (ton/yr)~~	~~Maximum Daily (lb/day)~~	~~Annual (ton/yr)~~	-
~~KCAPCD~~	~~VOC~~	~~N/A~~	~~25~~	~~-0.03~~	~~0.001~~	~~No~~
	~~NOx~~	~~N/A~~	~~25~~	~~-0.52~~	~~0.016~~	~~No~~
	~~SOx~~	~~N/A~~	~~27~~	~~-0.01~~	~~0.0002~~	~~No~~
	~~PM10~~	~~N/A~~	~~15~~	~~-0.02~~	~~0.0005~~	~~No~~
	~~PM2.5~~	~~N/A~~	~~N/A~~	~~-0.02~~	~~0.0005~~	~~No~~
	~~CO~~	~~N/A~~		~~-0.09~~	~~0.003~~	~~No~~

Table 2-7
Annual Secondary Criteria Pollutant Operation Emissions in the MBUAPCD

Air District	Pollutant	Significance Thresholds		Operational Mass Emissions		Significant
	-	Maximum Daily (lb/day)	Annual (ton/yr)	Maximum Daily (lb/day)	Annual (ton/yr)	-
MBUAPCD	VOC	137	N/A	0.43	0.004	No
	NOx	137	N/A	7.7	0.067	No
	PM10	82	N/A	0.23	0.002	No
	PM2.5	N/A	N/A	0.22	0.0019	No
	SOx	150	N/A	0.09	0.0008	No
	CO	550	N/A	1.31	0.011	No

Table 2-8
Annual Secondary Criteria Pollutant Operation Emissions in the MDAQMD

Air District	Pollutant	Significance Thresholds		Operational Mass Emissions		Significant
	-	Maximum Daily (lb/day)	Annual (ton/yr)	Maximum Daily (lb/day)	Annual (ton/yr)	-
MDAQMD	ROG	137	25	0.23	0.006	No
	NOx	137	25	4.2	0.10	No
	SOx	137	15	0.05	0.001	No
	PM10	82	15	0.13	0.003	No
	PM2.5	82	10	0.12	0.003	No
	CO	548	100	0.71	0.017	No

Table 2-9
Annual Secondary Criteria Pollutant Operation Emissions in the SBCAPCD

Air District	Pollutant	Significance Thresholds		Operational Mass Emissions		Significant
	-	Maximum Daily (lb/day)	Annual (ton/yr)	Maximum Daily (lb/day)	Annual (ton/yr)	-
SBCAPCD	ROC	240	N/A	0.33	0.006	No
	NOx	240	N/A	6.0	0.011	No
	PM10	80	N/A	0.18	0.003	No
	PM2.5	N/A	N/A	0.17	0.003	No
	CO	none		1.0	0.019	No

Table 2-10
Annual Secondary Criteria Pollutant Operation Emissions in the SLOCAPCD

Air District	Pollutant	Significance Thresholds		Operational Mass Emissions		Significant
	-	Maximum Daily (lb/day)	Annual (ton/yr)	Maximum Daily (lb/day)	Annual (ton/yr)	-
SLOCAPCD	ROG + NOx	25*	25*	1.6	0.10	No
	PM10	25	25	0.16	0.003	No
	PM2.5	N/A	N/A	0.15	0.003	No
	DPM**	1.25	N/A	0.16	0.003	No
	CO	550	N/A	0.9	0.017	No

* Significance threshold is based on ROG and NOx combined value.
** Diesel Particulate Matter

Table 2-11
Annual Secondary Criteria Pollutant Operation Emissions in the SLVAPCD

Air District	Pollutant	Significance Thresholds		Operational Mass Emissions		Significant
	-	Maximum Daily (lb/day)	Annual (ton/yr)	Maximum Daily (lb/day)	Annual (ton/yr)	-
SJVAPCD	ROG	N/A	10	-0.23	-0.014	No
	NOx	N/A	10	1.8	-0.10	No
	PM10	N/A	N/A	-0.19	-0.01	No
	PM2.5	N/A	N/A	-0.13	-0.01	No
	SOx	0.04 ppm (24-hour avg.); 0.25 ppm (1-hour average)		0.04	0.17	0.003
	CO	9.0 ppm (8-hour average); 20.0 ppm (1-hour average)		4.6	-1.7	-0.06

~~**Table 2-12**~~
~~**Annual Secondary Criteria Pollutant Operation Emissions in the SLVAPCD**~~

~~Air District~~	~~Pollutant~~	~~Significance Thresholds~~		~~Operational Mass Emissions~~		~~Significant~~
	-	~~Maximum Daily (lb/day)~~	~~Annual (ton/yr)~~	~~Maximum Daily (lb/day)~~	~~Annual (ton/yr)~~	-
~~VCAPCD~~	~~ROC~~	~~5~~	~~N/A~~	~~0.19~~	~~0.0035~~	~~No~~
	~~NOx~~	~~5~~	~~N/A~~	~~3.3~~	~~0.0621~~	~~No~~
	~~PM10~~	~~N/A~~	~~N/A~~	~~0.1~~	~~0.0019~~	~~No~~
	~~PM2.5~~	~~N/A~~	~~N/A~~	~~0.1~~	~~0.0018~~	~~No~~
	~~CO~~	~~9.0 ppm (8-hour average); 20.0 ppm (1-hour average)~~		~~0.56~~	~~0.011~~	~~No~~

Greenhouse Gases

In addition to criteria pollutant emissions, combustion processes generate GHG emissions that have the potential to affect global climate. Reducing the VOC content of direct-contact lubricants, metalworking fluids and rust inhibitors does not produce GHGs. ~~However, mobile sources used to deliver compliant products during the operational phase are expected to generate GHG emissions in combustion exhaust. The following GHG analysis focuses primarily on CO2 emissions because CO2 is the primary GHG pollutant emitted during the combustion process and is the GHG pollutant for which emission factors are most readily available. CARB EMFAC2007 emission factors for on-road mobile sources were used to determine carbon dioxide (CO2) and methane (CH4) emission factors. EMFAC2007 does not include nitrous oxide (N2O) emission factors. EPA's emission factors for locomotives were used to determine CO2 emission factors from locomotives. Neither N2O nor CH4 emission factors were identified and; therefore, not available for locomotives. Since N2O and CH4 emission factors for locomotives were not found, only CO2 could be analyzed. Therefore, only CO2 emissions were estimated for both trucks and rail cars. Detailed calculations of the GHG emissions are included in Appendix B.~~

The analysis of GHGs is a much different analysis than the analysis of criteria pollutants for the following reasons. For criteria pollutants, significance thresholds are based on daily emissions because attainment or non-attainment is based on daily exceedances of applicable ambient air quality standards. Further, several ambient air quality standards are based on relatively short-term exposure effects on human health, e.g., one-hour and eight-hour. Since the half-life of CO2 is approximately 100 years, the effects of GHGs are longer-term, affecting global climate over a relatively long time frame. As a result, GHG emission impacts are considered to be cumulative impacts rather than project-specific impacts.

Direct-contact Lubricants

The proposed amended rule would establish a~~n interim~~ VOC content limit of ~~70~~ 50 grams per liter for direct-contact lubricants effective January 1, 2012. Most products currently comply with the ~~interim~~ VOC content limit. No reformulation or replacement of direct-contact lubrications are expected to be needed to meet the ~~interim~~ VOC content limit. The existing direct-contact

lubricants are manufactured in the Midwest and delivered by rail. Therefore, direct-contact lubrication VOC content limits would not generate any secondary GHG emissions.

~~Compliance with the final VOC content limit of 50 grams per liter, effective January 1, 2015, is also expected to be met by using existing direct-contact lubricants. Although there are direct-contact lubricant available that currently comply with the 2015 VOC content limit, some owners/operators that do not currently use future compliant materials are expected to need to reformulate or replace their existing direct-content lubricants. Proposed project reformulated or replacement direct-contact lubricants are expected to be water-dilutable, vegetable-based or paraffinic-based. Water-dilutable lubricants are concentrated (i.e., water would be added at the metal working facility to dilute the concentrated lubricant before use) and, therefore; would be shipped in smaller quantities than existing lubricants. Water-dilutable and vegetable-based lubricants are expected to be supplied from the Midwest. Paraffinic-based lubricants are expected to be supplied from Texas or Richmond, California. All reformulated or replacement lubricants are expected to be delivered by rail. Since the reformulated or replacement lubricants would be supplied from suppliers that are either equidistant or nearer than existing suppliers and in lower volumes, secondary GHG emissions from delivery of reformulated or replacement lubricants are expected to be less than existing secondary GHG emissions. These GHG emissions reductions were not quantified for this analysis.~~

Metal Protecting Fluids ~~Rust Inhibitors~~

PAR 1144 would establish a new VOC content limit for military specified preservatives effective January 1, 2012. Since existing military specified preservatives that already comply with this proposed VOC content limit are available and in use, no change in mode, distance or frequency of transportation of rust inhibitors are expected. Therefore, no additional secondary GHG emissions from rust inhibitors are expected from PAR 1144.

General Metalworking Fluids

Existing naphthenic oil (light oil and general naphthenic based working fluid) is shipped primarily by diesel truck from Bakersfield. It was assumed that 10 percent of existing naphthenic oil is shipped by rail and 90 percent is shipped by diesel truck.

All naphthenic oil metalworking fluids, except for light naphthenic oil (40 SUS) metalworking fluids, are expected to already comply with the ~~interim~~ metalworking fluid VOC content limits of 75 and 130 grams per liter. To comply with the ~~interim~~ metalworking fluid VOC content limit, light naphthenic oil metalworking fluid users would replace light naphthenic oil with medium naphthenic oil (60 SUS). The 40 SUS and 60 SUS naphthenic oil are produced at the same facility in Bakersfield. Therefore, no changes in mode, length or frequency of transportation are expected (i.e., no change in secondary emissions from transportation of naphthenic oil). Therefore, the new metalworking fluid VOC content limits would not generate any secondary GHG emissions.

DMC and the currently used denatured alcohol are provided by the same supplier. Therefore, there would be no change secondary GHG emissions from the delivery of DMC.

~~To comply with the final metal working fluid VOC content limit of 50 grams per liter, all metal naphthenic oil based metal working fluid users are expected to need reformulated materials or to replace naphthenic oils in metal working fluids with compliant products. Water-dilutable and~~

~~vegetable-based oils are expected to be preferred because they cost less than paraffinic oils. SCAQMD staff estimates that approximately 30 percent of the naphthenic oil may be replaced by water-dilutable (20 percent) or vegetable-based (10 percent) metal working fluids. Water-dilutable oil would be shipped by rail from Cleveland, Ohio. Vegetable oil would be shipped by rail from Des Moines, Iowa. The remaining 70 percent of the naphthenic oil is expected to be replaced by paraffinic oil. The replacement paraffinic oil would be shipped by rail from Richmond, California or Texas. Based on cost, it was assumed that 30 percent of the paraffinic oil would be shipped from Texas and 70 percent would be shipped from Richmond, California. Rail from Richmond, California would be expected to travel along one of three routes: the Union Pacific US-101 route, the Union Pacific SR-99 route or the Burlington Northern Santa Fe SR-99 route. Both the Union Pacific SR-99 route and the Burlington Northern Santa Fe SR-99 route travel along the SR-99 from northern California to Bakersfield, from Bakersfield to Barstow, then from Barstow along the I-15 and I-10 through the district. Rail from Texas, Iowa and Ohio would be expected to travel from Arizona through San Bernardino, California. GHG emissions along the entire trip length from source (Bakersfield, Richmond, Texas, Iowa and Ohio) through district were estimated. Table 2-13 presents the existing and proposed metal working fluid transportation GHG emissions. Detailed calculations are presented in Appendix B. PAR 1144 is expected to result in an incremental increase of 0.53 metric ton of CO2 emissions per year. An incremental increase of 0.53 ton per year of CO2 emissions is less than the significance threshold of 10,000 metric tons of CO2eq per year.~~ No primary or secondary GHG emissions would be generated by PAR 1144. PAR 1144 would fully implement 2007 AQMP control measure CTS-01 – Emission Reductions from Lubricants, which along with other control measures in the 2007 AQMP, are a comprehensive ongoing regulatory program that would reduce overall GHGs emissions. Therefore, PAR 1144 is not considered significant for adverse GHG impacts.

~~Table 2-13~~
~~Annual CO2 Emission Reductions Resulting from PAR 1144~~

~~Description~~	~~CO2 Emissions, metric tons per year~~
~~Existing Fluid Truck and Rail Transportation~~	~~117~~
~~Proposed Fluid Rail Transportation~~	~~118~~
~~Total GHG Increase~~	~~0.53~~
~~Significance Threshold~~	~~10,000~~
~~Significant?~~	~~No~~

Criteria and Greenhouse Gas Conclusions

By establishing a new military specified preservative subcategory with a higher VOC content limit than is currently the case, PAR 1144 would forego previously expected VOC reductions; however, PAR 1144 as a whole would result in overall VOC reductions. PAR 1144 would not generate any direct emissions. Secondary emissions are not expected from PAR 1144 ~~from the difference in mode, frequency and distance of transport to deliver existing and expected replacement fluids are less than the operational significance thresholds in Tables 2-1 and 2-2~~. Therefore, PAR 1144 would not diminish an existing air quality rule or future compliance requirement resulting in a significant increase in any air pollutant.

Because secondary criteria emissions are not significant, they are not cumulatively considerable per CEQA Guidelines §15064(h)(1) and; therefore not cumulatively significant. Also, implementing all SCAQMD rules (including PAR 1144) is expected to result in overall emission reductions.

Since PAR 1144 would result in a VOC emissions reduction, it would not violate any air quality standard; contribute to an existing or projected air quality violation; or result in a cumulative considerable net increase in any criteria pollutant for which the region is in non-attainment under an applicable federal or state ambient air quality standard.

GHG emissions are considered cumulative impacts. ~~GHG emissions from PAR 1144 (0.53 metric ton of CO2 per year) are less than the significance threshold of 10,000 metric tons of CO2 per year; and together with other control measures in the 2007 AQMP, which is a comprehensive ongoing regulatory program that would reduce overall GHGs emissions~~ PAR 1144 would not generate any new GHG emissions; therefore, cumulative adverse GHG impacts from PAR 1144 are not considered significant.

III.d) PAR 1144 may result in toxic air contaminants (TAC) emissions from direct and indirect sources. Direct sources would include replacement or reformulated direct-contact lubricants, metalworking fluids and rust inhibitors. Replacement or reformulated direct-contact lubricants, metalworking fluids and rust inhibitors may contain TACs. Therefore, the use of replacement or reformulated direct-contact lubricants, metalworking fluids and rust inhibitors may increase health risks to nearby receptors.

Indirect sources would include emission from diesel trucks or related to rail cars used to transport both existing and replacement or reformulated direct-contact lubricants, metalworking fluids and rust inhibitors.

Direct-contact Lubricants

Owner/operators are expected to already comply with the ~~interim~~ VOC content limit for direct-contact lubricants. Therefore, no change in TAC emissions is expected from the ~~interim~~ VOC content limit for direct-contact lubricants. ~~Although there are direct-contact lubricant available that currently comply with the 2015 VOC content limit, some owners/operators that do not currently use future compliant materials (water-dilutable, vegetable-based or paraffinic oil-based direct-contact lubricants) are expected to need to reformulate or replace their existing direct-content lubricants. Water-dilutable and vegetable-based direct-contact lubricants may contain triethanolamine and monoethanolamine. Health risks from increase used of triethanolamine and monoethanolamine are evaluated below. Naphthenic and paraffinic oils may contain additives that have short-chain chlorinated paraffins (SCCPs).~~

General Metalworking Fluids

Metalworking fluids other than vanishing oil and rust inhibitors are not currently regulated. The proposed amended rule would establish ~~and interim~~ VOC content limits of 75 and 130 grams per liter effective January 1, 2012. There are products currently available that comply with the ~~interim~~ proposed VOC content limits. Some owners/operators that use light naphthenic oils (40 SUS) are expected replace them with 60 SUS naphthenic oils to comply with the ~~interim~~ VOC content limits. The TAC content of 60 SUS and 40 SUS naphthenic oils are expected to be

similar. Therefore, no change in TAC emissions is expected from the ~~interim~~ VOC content limit for general metalworking fluids.

~~Compliance with the final VOC content limit of 50 grams per liter, effective, January 1, 2015, is expected to be met by reformulated or replacement oils (paraffinic oils, water-dilutable oils or vegetable oils). Water-dilutable oils or vegetable-based oils are preferable because of the cost; however, paraffinic oils would likely be used because they provide better performance than water-dilutable and vegetable-based oils. Water-dilutable and vegetable-based direct-contact lubricants may contain triethanolamine and monoethanolamine. Health risks from increase used of triethanolamine and monoethanolamine are evaluated below. Naphthenic and paraffinic oils may contain additives that have short-chain chlorinated paraffins (SCCPs). Health risk from replacement of naphthenic and paraffinic oils are evaluated below.~~

Metal Protecting Fluids ~~Rust Inhibitors~~

Owner/operators would comply with the new military specified preservatives VOC content limit by using existing military specified preservatives; therefore, no change in TAC emissions from this category is expected. Since, there would be no change in TAC emissions; there would be no change in health risk from this category.

Toxic Air Contaminant Assessment

Dimethyl Carbonate

Subsequent to the release of the Draft EA for public review, an exemption was added to allow the use of dimethyl carbonate (DMC) as a cooling solvent in computed numerically controlled (CNC) machines where permeable media are used to maintain a vacuum that holds the part in place during cutting. There is only one facility that was identified that currently uses such a machine. The exemption applies only to affected machines existing at the time of the adoption of PAR 1144 and requires that the facility operators vent the machine out of the building. Since the CNC machine would be enclosed and vented out of the building, there would be no health risk from DMC to the workers. Off-site receptors would be exposed to the emissions vented outside of the building; therefore, health risk was estimated for the off-site receptors.

Interim Health Risk Health Risk Values

The Office of Environmental Health Hazard Assessment has developed interim non-carcinogenic acute and chronic reference exposure level (REL) values of 18,000 and 5,500 micrograms per cubic meter respectively for DMC.[6] No carcinogenic health values have been developed for DMC. However, EPA has developed a pre-external peer review unit risk factor of 1E-6 cubic meters per microgram for methanol.[7] Since DMC can be metabolized into methanol, a carcinogenic health risk can be estimated for the maximum amount of methanol that can be degraded from the DMC emitted.

EPA's methanol unit risk factor is under public review, so this value may change or be withdrawn. The same is true with OEHHA's developed interim non-carcinogenic acute and

[6] OEHHA, Revised Assessment of Health Effects of Exposure to Dimethyl Carbonate, a Chemical Petitioned for Exemption from VOC Rules, memo from Richard Corey to Melanie Marty, Ph.D., December 8, 2009.

[7] EPA, Toxicological Review of Methanol (CAS No. 67-56-1) In Support of Summary Information on the Integrated Risk Information System (IRIS), December 2009. EPA/635/R-09.

chronic REL values. Therefore, health risk estimates from these interim values is considered conservative.

Non-Carcinogenic Health Risk

The existing facility would use a maximum of 327 gallons (2,917 pounds) of DMC annually. Non-carcinogenic health risk from DMC was estimated according to the Tier 2 methodology presented in the SCAQMD Risk Assessment Procedures for Rules 1401 and 212, Package L, July 2008. The nearest sensitive receptor is 100 meters from the affected facility. The nearest off-site worker receptor is within 25 meters. Worst-case point source parameters were used. Since the facility is within Source Receptor Area 1, Downtown Los Angeles meteorology was used. Detailed calculations are presented in Appendix B. The maximum chronic hazard indices would be 0.0069 for the worker receptor and 0.0006 for sensitive receptor. The maximum acute hazard indices would be 0.16 for the worker receptor and 0.03 for sensitive receptor. Hazard indices below 1.0 are not considered significant; therefore, PAR 1144 would not be significant for non-carcinogenic health risk.

Carcinogenic Health Risk

Therefore, 2,917 pounds per year of DMC would form 2,701 pounds per year of methanol. The DMC would be vented at ambient temperature from a 37 foot high, eight inch diameter stack at a flow rate of 300 cubic feet per minute. The building is L-shaped and 35 feet tall. The stack would be centered in the western portion of the building. Building downwash was estimated using EPA's BIP model. DMC concentrations were estimated at receptors placed at 20 meter spacing along the fence-line and in a 50 meter by 50 meter grid surrounding the facility. Central Los Angeles meteorological data was used. A maximum DMC concentration of 24.9 micrograms per cubic meter was estimated at a worker receptor on the southwest fence line of the affected facility. A maximum DMC concentration 3.1 micrograms per cubic meter was estimated at a residential receptor to the south of the affected facility.

The stoichiometric rate of dimethyl carbonate to methanol is two-to-one (two moles of methanol are formed from each mole of dimethyl carbonate) based on the degradation formula:

$$C3H6O3 + 2\ H2O \rightarrow 2\ CH3OH + H2CO3$$

To convert the molar rate of methanol to a mass rate of methanol, the molar rate of methanol is converted to a mass rate by multiplying the molar rate of methanol by its molecular weight of 32 grams per mole. So for every gram of dimethyl carbonate 0.71 grams of methanol would be formed.

(1 gram C3H6O3)/(90 gram C3H6O3/mole C3H6O3) x (2 mole CH3OH/mole C3H6O3) x (32 gram CH3OH/mole CH3OH) = 0.71 gram CH3OH

To estimate the exposure to DMC that has metabolized into methanol, the maximum modeled DMC concentration of 24.9 micrograms per cubic meter at a worker was multiplied by 0.71 to yield an effective methanol concentration of 17.7 micrograms per cubic meter. The maximum methanol concentration for a resident would be 2.2 micrograms per cubic meter.

The area on this side of the facility is set aside for overhead electrical lines and trail along the Los Angeles River. Receptors in this area would not be classified either as sensitive or worker

receptors, because workers and people using the trail are not expected to stay at this location for long periods of time. However, since workers may visit the site to be conservative the receptor was treated as a worker receptor. A carcinogenic health risk of 3.3 in one million was estimated using worker receptor parameters (149 liters per kilogram-day breathing rate, of 245 days per year exposure frequency and exposure duration of 40 years). The maximum carcinogenic health risk at a residential receptor was estimated to be 2.1 in one million (302 liters per kilogram-day breathing rate, of 350 days per year exposure frequency and exposure duration of 70 years). Incremental increases in carcinogenic health risk that are less than ten in a million are not considered significant; therefore, PAR 1144 is not expected to generate significant carcinogenic health risk.

Chlorinated Paraffins Evaluation

~~Both n~~Naphthenic ~~and paraffinic~~ metalworking fluids may contain additives with chlorinated paraffins. On January 19, 2010, EPA released a short-chain chlorinated paraffins (SCCPs) Action Plan. SCCPs are persistent, bioaccumulative, and toxic to aquatic organisms at low concentrations. They can remain in the environment for a significant amount of time and can bioaccumulate in animal tissues, increasing the probability and duration of exposure. Even relatively small releases of these chemicals from individual manufacturing, processing, or waste management facilities have the potential to accumulate over time to higher levels and cause significant adverse impacts on the environment. EPA intends to further evaluate whether medium-chain chlorinated paraffins (MCCPs) and long-chain chlorinated paraffins (LCCPs) also should be addressed. These chemicals appear to present similar concerns, although data on them are not as comprehensive as data on SCCPs.

PAR 1144 is designed to reduce VOC emissions from affected operations, but is not directly designed to reduce TACs. However, to the extent VOCs used in affected operations are toxic, PAR 1144 could result in a slight reduction in TAC emissions. Individual rules in SCAQMD Regulation XIV are designed to reduce TACs. As a VOC rule, PAR 1144 does not limit the use of low- or non-VOC additives directly. PAR 1144 controls VOC emissions by establishing VOC content limits for metalworking fluids, which include components such as additives. To comply with the VOC content limits, ~~50~~ 70 or 130 grams per liter, in the working fluid category; affected metalworking owners/operators are expected to replace light naphthenic oil based metalworking fluids with ~~paraffinic~~ heavy naphthenic oil~~s~~-based~~, water-dilutable oils-based or vegetable oil-based~~ metalworking fluids. Replacing light naphthenic oils with heavy naphthenic oils in metalworking fluids is not expected to increase the amount of SCCP additives. Since no other replacement or reformulation of products is expected to be required to comply with PAR 1144, no change in SCCP additives is expected. Therefore, no increase in health risk from SCCP additives is expected from PAR 1144.

~~Because of its paraffin content, paraffinic oil cannot contain the same amount of chlorinate paraffin additive as naphthenic oil without the additive forming a solid, which would precipitate out of the metal working fluid. Water-dilutable oil or vegetable oil based metal working fluids would not contain any chlorinate paraffin.~~

~~Therefore, by replacing naphthenic oil with paraffinic oil, is expected to reduce the amount of chlorinate paraffin additive used. Reducing the amount of chlorinate paraffin additive would reduce health risk.~~

Triethanolamine and Monoethanolamine Evaluation

Monoethanolamine and triethanolamine are only expected to be found in non naphthenic oil-based metalworking fluids. Since PAR 1144 compliant non-naphthenic metalworking fluids and direct-contact lubricants are already in use and the sales weighed average VOC content for these products is below the proposed VOC content limit, SCAQMD staff does not expect metalworking owner/operators would reformulate or replace products. Since PAR 1144 is not expected to result in replacement or reformulation of non-naphthenic oil-based metalworking fluids no increase in monoethanolamine and triethanolamine is expected. Therefore, no increase in health risk from monoethanolamine and triethanolamine is expected from PAR 1144.

~~PAR 1144 is expected to increase the use of water-dilutable metal working fluid, but such fluids currently meet the VOC content limits proposed for PAR 1144. Some direct-contact lubricants, and naphthenic oils might be replaced with water-dilutable oils or vegetable oils.~~

~~Triethanolamine and monoethanolamine are components of some water-dilutable metal working fluid. Based on a review of material safety data sheets (MSDSs), the highest triethanolamine content in an identified potential alternative compliant metal working fluid was 20 percent, and the highest monoethanolamine content in an identified potential alternative compliant metal working fluid was five percent. Triethanolamine has been identified as causing occupational asthma by the Association of Environmental and Occupational Health Clinics. The American Conference of Industrial Hygienists (ACGIH) Threshold Limit Values (TLV) of five milligrams per cubic meter is associated with eye and skin irritation, and contact dermatitis. The Cal/OSHA permissible exposure limit (PEL) is also five milligrams per cubic meter. TLV and Cal/OSHA PELs are short-term concentration averages (eight-hour averages). The National Toxicology Program concluded that triethanolamine caused liver tumors in female mice and may have caused a slight increase in hemanogiosarcomas of the liver in male mice. However, no cancer potency values were identified in the Assessment, Development and Demonstration of Alternatives to VOC-Emitting Lubricants, Vanishing Oils and Rust Inhibitors Report.~~

~~Monoethanolamine causes eye and skin irritation in animal testing and an ACGIH TLV of three ppm has been established to minimize skin and eye irritation in workers. The Cal/OSHA PEL is also three ppm.~~

~~Cancer potency and reference exposure limits for triethanolamine and monoethanolamine have not been established by OEHHA. SCAQMD staff does not typically evaluate cancer and non-cancer health risks from chemicals that do not have cancer potency and reference exposure limits provided by OEHHA. A similar analysis to the following analysis was prepared in response to a request from the public during the public workshop prior to the adoption of Rule 1144. For consistency the following TAC analysis has been prepared for PAR 1144. It should be noted that SCAQMD staff does not normally evaluate health risks using the following methodology because it is not consistent with SCAQMD HRA procedures in the SCAQMD's Risk Assessment Procedures for Rules 1401 and 212.~~

~~The largest amount of metal working fluid used at a single facility is 32,000 gallons of fluid per year. Metal working fluid is used in aluminum metal working processes. As a worst-case analysis it was assumed that the alternative metal working fluid with the highest content of triethanolamine or monoethanolamine identified in MSDSs would be used at this facility. The~~

~~MSDS for alternative fluids show a maximum dilution rate of 10 to 1. Therefore, only 3,200 gallons of alternative metal working fluid would be expected.~~

~~Since OEHHA cancer potency and reference exposure limits have not been established, but Cal/OSHA PELs and ACGIH TLVs are available, triethanolamine and monoethanolamine concentrations were evaluated against the Cal/OSHA PELs/ACGIH TLVs. Any compound that exceeds the applicable PEL or TLV concentration at the receptor could cause adverse health effects and would, therefore, be considered a significant adverse health impact.~~

~~Based on the above assumptions, a receptor at 25 meters or less from facility with the largest metal working fluid use would be exposed to a concentration of 2.9 milligrams per cubic meter of triethanolamine and 0.7 ppm of monoethanolamine. These concentrations are less than the TLVs and Cal/OSHA PELs of five milligrams per cubic meter for triethanolamine and three ppm for monoethanolamine.~~

Diesel Particulate Exhaust

The same supplier that currently supplies the CNC machine operator denatured alcohol would supply the operator with DMC. The same suppliers provide both 60 SUS naphthenic oils and the currently used light naphthenic oils. No other solvent substitutions or replacements are expected.

Since no change in mode, distance or frequency of transportation is expected to be necessary for affected operators to comply with PAR 1144, no increase in diesel particulate exhaust is expected. Therefore, no increase in health risk is expected from transportation related to PAR 1144.

~~Two secondary toxic air contaminate (TAC) emissions scenarios were developed one where all rail cars from Richmond would travel along the Union Pacific US-101 route and another where all rail cars from Richmond would travel along either the Union Pacific SR-99 or the Burlington Northern Santa Fe SR-99. Since all rail cars originate from the same refinery in Richmond, it was assume that only one car per day would be sent to the district. In both scenarios, it was also assumed that three rail cars would arrive from out of state: one from Texas, one from Iowa and one from Ohio. The Union Pacific SR-99/Burlington Northern Santa Fe SR-99 route scenario was used for annual emissions for the KCAPCD and MDAQMD, because it generated greater TAC emissions per mile (see Appendix B) in those air districts. The Union Pacific US-101 route scenario was used for annual emissions for the district, BAAQMD, MBUAPCD, SBCAPCD, SJVAPCD, SLOCAPCD and VACAPCD, because it generated greater TAC emissions per mile (see Appendix B) in those air districts.~~

~~Secondary TAC exposures were also evaluated from exposure to diesel particulate matter from rail transportation of compliant products. Since health risk assessment is a local impact, these emissions cannot be offset by the existing truck and rail emissions, which occur along a different route. Health risk is typically required for sensitive receptors within a quarter mile of a source. Therefore, the localized affected around a sensitive receptor would be a half mile (quarter mile on each side). There are three distinct rail car routes proposed: the Union Pacific US 101 route, the Union Pacific SR-99/Burlington Northern Santa Fe SR-99 route, and the out of state route. Emissions per half mile along the Union Pacific US 101 route was estimated to be 0.04 pounds of DPM per year. Emissions per half mile along the Union Pacific SR-99/Burlington Northern~~

~~Santa Fe SR-99 route were estimated to 0.03 pounds of DPM per year. Emissions per half mile along the out of state route were estimated to be 0.02 pounds of DPM per year.~~

~~The screening emission level in Table 1 of the Risk Assessment Procedures for Rules 1401 and 212, Version 7.0 is 0.12 pounds of DPM per year at the closest receptor distance (25 meters). The expected DPM emissions increase of 0.04 pounds per year per half mile to any receptor along the rail route through SCAQMD is below the screening threshold value of 0.12 pounds of DPM per year.~~

Conclusion

~~Since triethanolamine and monoethanolamine concentrations would not cause exposure exceeding the applicable PELs or TLVs and diesel mass emissions are below significance thresholds, significant adverse air quality impacts to sensitive receptors are not expected from implementing PAR 1144.~~ The health risk from DMC would be the only health risk from the proposed project, because no other health effects were identified from PAR 1144. Since all health risk from DMC would be less than significant, PAR 1144 is not expected to generate significant for health risk.

III.e) Historically, the SCAQMD has enforced odor nuisance complaints through SCAQMD Rule 402 - Nuisance. Affected facilities are not expected to create objectionable odors affecting a substantial number of people for the following reasons: 1) operators currently use metalworking fluids; 2) the odors of existing and replacement solvents is expected to be similar; and 3) the operations occur at facilities that are typically located in industrial zones.

Conclusion

Based on the preceding discussions, PAR 1144 is expected to reduce VOC emissions, which is an air quality benefit.

The proposal has no provision that would cause a violation of any air quality standard or directly contribute to an existing or projected air quality violation. The lower VOC emission would assist in reducing overall VOC, PM, and ozone concentrations throughout the district.

Since VOC air quality effects from implementing PAR 1144 are seen as benefits, and PAR 1144 would not cause an exceedance of any of the air quality significance thresholds in Table 2-1, air quality impacts are not considered to be cumulatively considerable as defined in CEQA Guidelines §15065(h)(1). The analysis of GHGs also concluded that PAR 1144 would not generate significant adverse cumulative GHG impacts. Therefore, the proposed project is not expected to result in significant adverse cumulative impacts for any criteria or GHG pollutant.

Thus, PAR 1144 is not expected to result in significant adverse air quality impacts, and mitigation measures are not required.

		Potentially Significant Impact	Less Than Significant Impact	No Impact
IV.	**BIOLOGICAL RESOURCES.** Would the project:			
a)	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☑
b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☑
c)	Have a substantial adverse effect on federally protected wetlands as defined by §404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☑
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☑
e)	Conflicting with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☑
f)	Conflict with the provisions of an adopted Habitat Conservation plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☑

Significance Criteria

Impacts on biological resources will be considered significant if any of the following criteria apply:

- The project results in a loss of plant communities or animal habitat considered to be rare, threatened or endangered by federal, state or local agencies.
- The project interferes substantially with the movement of any resident or migratory wildlife species.
- The project adversely affects aquatic communities through construction or operation of the project.

Discussion

IV.a), b), c), & d) PAR 1144 would not require any new development or require modifications to buildings or other structures to comply with the proposed VOC content limits for direct-contact lubricants, metalworking fluids and rust inhibitors. As a result, PAR 1144 would not directly or indirectly affect any species identified as a candidate, sensitive or special status species, riparian habitat, federally protected wetlands, or migratory corridors. For these same reasons, PAR 1144 is not expected to adversely affect special status plants, animals, or natural communities.

IV.e) & f) PAR 1144 would not conflict with local policies or ordinances protecting biological resources or local, regional, or state conservation plans because it would only affect direct-contact lubricants~~,~~ and metalworking fluids ~~and rust inhibitor~~ operations at 7,000 existing facilities. Additionally, PAR 1144 would not conflict with any adopted local policies, ordinances protecting biological resources, Habitat Conservation Plan, Natural Community Conservation Plan, or any other relevant habitat conservation plan for the same reason identified in Item IV. a), b), c), and d) above.

The SCAQMD, as the Lead Agency for the proposed project, has found that, when considering the record as a whole, there is no evidence that the proposed project will have potential for any new adverse effects on wildlife resources or the habitat upon which wildlife depends. Accordingly, based upon the preceding information, the SCAQMD has, on the basis of substantial evidence, rebutted the presumption of adverse effect contained in §753.5 (d), Title 14 of the California Code of Regulations.

Based upon these considerations, significant adverse biological resources impacts are not anticipated and will not be further analyzed in this ~~Draft~~ Final EA. Since no significant adverse biological resources impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES. Would the project:			
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☑
b) Cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5?	☐	☐	☑
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☑
d) Disturb any human remains, including those interred outside a formal cemeteries?	☐	☐	☑

Significance Criteria

Impacts to cultural resources will be considered significant if:
- The project results in the disturbance of a significant prehistoric or historic archaeological site or a property of historic or cultural significance to a community or ethnic or social group.
- Unique paleontological resources are present that could be disturbed by construction of the proposed project.
- The project would disturb human remains.

V. a), b), c), & d) PAR 1144 would not require any new development or require modifications to buildings or other structures to comply with the proposed VOC content limits for direct-contact-lubricants~~,~~ and metalworking fluids ~~and rust inhibitors~~. All of the affected activities occur within existing structures. No construction is expected to meet the requirements of PAR 1144, except at a facility that would be required to duct an existing CNC machine to the outside. The construction would occur within a building at the affected facility and is not expected to involve any heavy-duty construction equipment and will occur on existing paved surfaces. As a result, no impacts to historical resources are anticipated to occur as a result of implementing the proposed project. PAR 1144 is not expected to require physical changes to the environment, which may disturb historical, paleontological or archaeological resources. Since all construction or physical modifications related to PAR 1144 would occur within the facility boundaries and within structures of 7,000 existing facilities, it is not expected to disturb any human remains.

Based upon these considerations, significant adverse cultural resources impacts are not expected from the implementing PAR 1144 and will not be further assessed in this ~~Draft~~ Final EA. Since no significant adverse cultural resources impacts were identified, no mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant Impact	No Impact
VI.	**ENERGY.** Would the project:			
a)	Conflict with adopted energy conservation plans?	☐	☐	☑
b)	Result in the need for new or substantially altered power or natural gas utility systems?	☐	☐	☑
c)	Create any significant effects on local or regional energy supplies and on requirements for additional energy?	☐	☐	☑
d)	Create any significant effects on peak and base period demands for electricity and other forms of energy?	☐	☐	☑
e)	Comply with existing energy standards?	☐	☐	☑

Significance Criteria

Impacts to energy and mineral resources will be considered significant if any of the following criteria are met:
- The project conflicts with adopted energy conservation plans or standards.
- The project results in substantial depletion of existing energy resource supplies.
- An increase in demand for utilities impacts the current capacities of the electric and natural gas utilities.
- The project uses non-renewable resources in a wasteful and/or inefficient manner.

Discussion

VI.a), b), c), d) & e) PAR 1144 would only affect the VOC content of direct-contact lubricants, metalworking fluids and rust inhibitors at 7,000 existing facilities. Replacement of solvents is not expected to increase any electricity or for natural gas demand in any way.

With the exception of requiring duct work to vent an existing CNC machine to existing duct work, no construction is expected to comply with PAR 1144. The construction of the additional duct work is not expected to require gasoline or diesel-fueled construction equipment. Any

electricity usage is not expected to be greater than that used for routine maintenance at the facility, so no adverse energy impacts are expected from construction.

Diesel fuel is consumed during transport of metalworking fluids.

Direct-contact Lubricants

The proposed amended rule would establish a~~n interim~~ VOC content limit of ~~70~~ 50 grams per liter for direct-contact lubricants effective January 1, 2012. Most products currently comply with the~~ interim~~ proposed VOC content limit. No reformulation or replacement of direct-contact lubrications are expected to be needed to meet the~~ interim~~ VOC content limit. Therefore, no change in fuel consumption is expected. ~~The existing direct-contact lubricants are manufactured in the Midwest and delivered by rail.~~

~~Compliance with final VOC content limit of 50 grams per liter, effective January 1, 2015, is also expected to be met by using existing direct-contact lubricants. Although there are direct-contact lubricant available that currently comply with the 2015 VOC content limit, some owners/operators that do not currently use future compliant materials are expected to need to reformulate or replace their existing direct-content lubricants. Proposed project reformulated or replacement direct-contact lubricants are expected to be water-dilutable, vegetable-based or paraffinic-based. Water-dilutable lubricants are concentrated (i.e., water would be added at the metal working facility to dilute the concentrated lubricant before use) and, therefore; would be shipped in smaller quantities that existing lubricants. Water-dilutable and vegetable-based lubricants are expected to be supplied from the Midwest. Paraffinic-based lubricants are expected to be supplied from Texas or Richmond, California. All reformulated or replacement lubricants are expected to be delivered by rail. Since the reformulated or replacement lubricants would be supplied from suppliers that are either equidistant or nearer than existing suppliers and in lower volumes, diesel fuel consumption from delivery of reformulated or replacement lubricants is expected to be less than existing diesel fuel consumption. These diesel fuel consumption reductions were not quantified for this analysis.~~

Metal Protecting Fluids ~~Rust Inhibitors~~

PAR 1144 would establish a new VOC content limit for military specified preservatives effective January 1, 2012. Since existing military specified preservatives already comply with this proposed VOC content limit are available and in use, no change in mode, distance or frequency of transportation of rust inhibitors are expected. Therefore, no additional diesel fuel consumption from rust inhibitors is expected from PAR 1144.

General Metalworking Fluids

Existing naphthenic oil (light oil and general naphthenic based working fluid) is shipped primarily by diesel truck from Bakersfield. It was assumed that 10 percent of existing naphthenic oil is shipped by rail and 90 percent is shipped by diesel truck.

All naphthenic oil metalworking fluids, except for light naphthenic oil (40 SUS) metalworking fluids, are expected to already comply with the~~ interim~~ metalworking fluid VOC content limits of 75 or 130 grams per liter. To comply with the ~~interim~~ metalworking fluid VOC content limits, light naphthenic oil metalworking fluids are expected to be replaced by metalworking fluids with medium naphthenic oil (60 SUS). The 40 SUS and 60 SUS naphthenic oil are produced at the same facility in Bakersfield. Therefore, no changes in mode, length or frequency

of transportation are expected (i.e., no change in secondary emissions from transportation of naphthenic oil).

~~To comply with the final metal working fluid VOC content limit of 50 grams per liter, all naphthenic oils in metal working fluids are expected to be reformulated or replaced with paraffinic oils, water-dilutable oils or vegetable oils. Water-dilutable oils and vegetable-based oils are expected to be preferred because they are cost less than paraffinic oils. SCAQMD staff estimates that approximately 30 percent of the naphthenic oils may be replaced by water-dilutable (20 percent) or vegetable based (10 percent) metal working fluids. Water- dilutable oils would be shipped by rail from Cleveland, Ohio. Vegetable oils would be shipped by rail from Des Moines, Iowa. The remaining 70 percent of the naphthenic oils are expected to be replaced by paraffinic oils. The replacement paraffinic oils would be shipped by rail from in from Richmond, California or Texas. Based on cost, it was assumed that 30 percent of the paraffinic oils would be shipped from Texas and 70 percent would be shipped from Richmond, California. Rail from Richmond, California would be expected to travel along one of three routes: the Union Pacific US-101 route, the Union Pacific SR-99 route or the Burlington Northern Santa Fe SR-99 route. The Union Pacific US-101 route travels along the US-101. Both the Union Pacific SR-99 route and the Burlington Northern Santa Fe SR-99 route travel along the SR-99 from northern California to Bakersfield, from Bakersfield to Barstow, then from Barstow along the I-15 and I-10 through the district. Rail from Texas, Iowa and Ohio would be expected to travel from Arizona through San Bernardino, California. Diesel fuel consumption emissions along the entire trip length from source through district were estimated. Table 2-14 presents the existing and proposed metal working fluid transportation diesel fuel consumption. Detailed calculations are presented in Appendix B.~~ Since PAR 1144 is expected to result in an incremental decrease of diesel fuel consumption, diesel fuel consumption is not considered significant.

~~Table 2-14~~
~~Diesel Fuel Consumption~~

~~Working Fluid~~	**~~Diesel Usage, gal/year~~**
~~Existing Fluid Truck and Rail Transportation~~	~~12,415~~
~~Proposed Fluid Rail Transportation~~	~~2,403~~
~~Difference in Annual Diesel Fuel Consumption~~	~~-10,013~~

Based on the above information, PAR 1144 is not expected to conflict with adopted energy conservation plans or standards; cause substantial depletion of existing energy resource supplies; increase demand for utilities, which would adversely impact the current capacities of the electric and natural gas utilities or use non-renewable resources in a wasteful and/or inefficient manner. Operators affected by PAR 1144 are expected to continue to comply with all existing and applicable energy standards and/or conservation plans and/or programs.

PAR 1144 is not expected to generate significant adverse energy resources impacts and will not be discussed further in this ~~Draft~~ Final EA. Since no significant energy impacts were identified, no mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant Impact	No Impact
VII.	**GEOLOGY AND SOILS.** Would the project:			
a)	Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☑
	• Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?	☐	☐	☑
	• Strong seismic ground shaking?	☐	☐	☑
	• Seismic–related ground failure, including liquefaction?	☐	☐	☑
	• Landslides?	☐	☐	☑
b)	Result in substantial soil erosion or the loss of topsoil?	☐	☐	☑
c)	Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in on- or offsite landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☑
d)	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☑
e)	Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☑

Significance Criteria

Impacts on the geological environment will be considered significant if any of the following criteria apply:

- Topographic alterations would result in significant changes, disruptions, displacement, excavation, compaction or over covering of large amounts of soil.
- Unique geological resources (paleontological resources or unique outcrops) are present that could be disturbed by the construction of the proposed project.

- Exposure of people or structures to major geologic hazards such as earthquake surface rupture, ground shaking, liquefaction or landslides.
- Secondary seismic effects could occur which could damage facility structures, e.g., liquefaction.
- Other geological hazards exist which could adversely affect the facility, e.g., landslides, mudslides.

Discussion

VII.a) PAR 1144 would not require any new development or require modifications to buildings or other structures to comply with the proposed VOC content limits for direct-contact lubricants~~,~~ and metalworking fluids ~~and rust inhibitors~~. All of the affected activities occur within existing structures. ~~No~~ With the exception of installing a duct to vent an existing CNC machine to existing ductwork, no construction is expected to meet the requirements of PAR 1144. The installing of the duct would occur on paved surfaces. As a result, substantial exposure of people or structure to the risk of loss, injury, or death involving seismic-related activities, such as strong seismic shaking, landslides, etc. beyond what currently may exist is not anticipated as a result of implementing PAR 1144 and will not be further analyzed in this ~~Draft~~ Final EA.

VII.b), c), d) & e) PAR 1144 is not expected to require new development or construction of new structures. Therefore, PAR 1144 would not significantly impact soils or result in locating new structures on geologic units or soils that are unstable or could potential results in landslides, subsidence, etc. PAR 1144 would not affect soil erosion or loss of soils.

Based on the above discussion, the proposed project is not expected to have an adverse impact on geology or soils. Since no significant adverse impacts are anticipated, this environmental topic will not be further analyzed in the ~~Draft~~ Final EA. No mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant Impact	No Impact
VIII.	**HAZARDS AND HAZARDOUS MATERIALS.** Would the project:			
a)	Create a significant hazard to the public or the environment through the routine transport, use, disposal of hazardous materials?	☐	☐	☑
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☑

		Potentially Significant Impact	Less Than Significant Impact	No Impact
c)	Emit hazardous emissions, or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☑
d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would create a significant hazard to the public or the environment?	☐	☐	☑
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☑
f)	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☑
g)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☑
h)	Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☑
i)	Significantly increased fire hazard in areas with flammable materials?	☐	☐	☑

Significance Criteria

Impacts associated with hazards will be considered significant if any of the following occur:
- Non-compliance with any applicable design code or regulation.
- Non-conformance to National Fire Protection Association standards.
- Non-conformance to regulations or generally accepted industry practices related to operating policy and procedures concerning the design, construction, security, leak detection, spill containment or fire protection.

- Exposure to hazardous chemicals in concentrations equal to or greater than the Emergency Response Planning Guideline (ERPG) 2 levels.

VIII.a, b) c) & i) Hazardous properties of existing and replacement solvents were also evaluated. Unfortunately, lower and upper explosive limits were not presented on most MSDSs. One MSDS for a alternative fluid reported the lower and upper explosive limits are one and 10 percent respectively. MSDSs for two existing fluids reported lower and upper explosive limits between one and 10 percent and 0.7 and five percent. Vapor pressures and densities were typically listed as less than a certain value; therefore, comparison is difficult. Existing and proposed alternative fluids typically had Hazardous Materials Information System (HMIS) ratings of one for both health and flammability. Only a single alternative fluid had a HMIS rating of one for reactivity, while the MSDSs for all existing had a HMIS rating for reactivity of zero. Based on a review of MSDSs the hazardous properties of alternative fluids are similar to existing fluids. A summary of the comparison of hazardous properties is included in Appendix B.

Water-dilutable metalworking fluids may contain triethanolamine and monoethanolamine. Ethanolamine, commonly known as monoethanolamine is an organic chemical compound that is a flammable, corrosive, colorless, viscous liquid with an odor similar to that of ammonia. Monoethanolamine is produced by reacting ethylene oxide with aqueous ammonia, a reaction that produces triethanolamine. Based on a review of MSDSs of known aqueous metalworking fluids replacements, one metalworking fluid has a 20 percent triethanolamine content and another has a five percent monoethanolamine. Triethanolamine has been identified as causing occupational asthma by the Association of Environmental and Occupational Health Clinics. The American Conference of Industrial Hygienists (ACGIH) Threshold Limit Values (TLV) of five milligrams per cubic meter is associated with eye and skin irritation, and contact dermatitis. The Cal/OSHA permissible exposure limit (PEL) is also five milligrams per cubic meter. TLV and Cal/OSHA PELs are short-term concentration averages (eight-hour averages). The National Toxicology Program concluded that triethanolamine caused liver tumors in female mice and may have caused a slight increase in hemanogiosarcomas of the liver in male mice. However, no cancer potency values were identified in the Assessment, Development and Demonstration of Alternatives to VOC-Emitting Lubricants, Vanishing Oils and Rust Inhibitors report.[8]

Monoethanolamine causes eye and skin irritation in animal testing and an ACGIH TLV of three ppm has been established to minimize skin and eye irritation in workers. The Cal/OSHA PEL for monethanolamine is also three ppm.

Monoethanolamine and triethanolamine are only expected to be found in non naphthenic oil-based metalworking fluids. Since PAR 1144 is not expected to require or result in replacement or reformation of non-naphthenic oil-based metalworking fluids no increase in monoethanolamine and triethanolamine is expected.

~~To determine the potential hazard and exposure to the public from fluids reformulate with monethanolamine and triethanolamine, the largest usr of metal working fluids was evaluated to~~

[8] Institute for Research and Technical Assistance, Assessment, Development and Demonstration of Alternatives to VOC-Emitting Lubricants, Vanishing Oils and Rust Inhibitors, August 2006 http://www.irta.us/South%20Coast%20Lube,%20Vanish,%20Rust.pdf

~~determine the "worst-case" scenario and the most conservative analysis. The largest amount of working fluid used at a single facility is 32,000 gallons per year. The facility does not use water-dilutable metal working fluids and is not likely to convert to water-dilutable metal working fluids. However, as a worst-case, if the facility were to use the working fluid with the largest concentration of triethanolamine approximately 5,600 pounds of triethanolamine would be used. Since, the alternative lubricant contained monoethanolamine in a fourth of the concentration of triethanolamine, approximately 1,400 pounds of monoethanolamine would be used per year. An evaluation of the health risk from these TACs is presented in the Air Quality Section. The concentrations of triethanolamine and monoethanolamine are expected to below the ACGIH TLV and Cal/OSHA PEL of three ppm for monoethanolamine and five micrograms per cubic meter for triethanolamine; therefore, it was concluded that the potential health risks are less than significant.~~

~~Since the triethanolamine and monoethanolamine are used in dilute water-dilutable lubricants and these lubricants are expected to be delivered in a single 55 gallon drum at any one time, the amount of triethanolamine and monoethanolamine that might be accidentally released is small. Aqueous waste containing triethanolamine and monoethanolamine would be sent to hazardous waste disposal sites.~~

PAR 1144 includes an exemption that would allow the use of DMC in a machine at a facility that currently uses denatured alcohol. No other facility was identified that has a CNC machine where permeable media are used to maintain a vacuum that holds a part in place during cutting. Since the exemption applies only to CNC machines that exist at the date of adoption of PAR 1144, the exemption would not apply to new CNC machines. The facility would replace 327 gallons of denatured alcohol with 327 gallons of DMC. DMC has a higher flashpoint than denatured alcohol (18 ºC for DMC and 13 ºC for denatured alcohol). DMC has a higher autoignition temperature than denatured alcohol (458ºC for DMC and 363ºC for denatured alcohol). The explosive range is smaller for DMC than for denatured alcohol (4.2 percent to 12.9 percent for DMC and 3.3 percent to 19 percent for denatured alcohol). DMC has a lower vapor pressure than denatured alcohol (42 millimeters of mercury for DMC and 44.6 millimeters of mercury for denatured alcohol. DMC has a higher vapor density than denatured alcohol (3.1 for DMC and 1.6 for denatured alcohol). Both have similar National Fire Protection Association Ratings (Health: 1, Flammability:3, Reactivity:0 for DMC and Health: 0, Flammability:3, Reactivity:0 for denatured alcohol). Both are have a DOT Hazard Class No. of 3. DMC is insoluble in water and short term biodegradation is not expected. Denatured alcohol is soluble in water and readily biodegradable. With the exception of health hazards, DMC and denatured alcohol are expected to have similar adverse hazard impacts (e.g., flammability, explosivity, etc.). Health risks from DMC on off-site receptors are present in the Air Quality Section of this EA, and determined to be less than significant. Health risks to on-site workers would be minimal because, the CNC operation would be enclosed and vented out of the building. Based on the above discussion, DMC is not expected to cause an increase in hazard impacts possible exposure during routine transport, use or disposal of hazardous material from accidental releases of toxic substances.

The shift to lower VOC content metalworking fluids under PAR 1144 is not expected in general to ~~reduce~~ change the amount of toxics in the reformulation of metalworking fluids and solvent cleaning~~, which would reduce exposure to the public; including sensitive receptors such as, existing or proposed schools; hospitals, etc., and releases into the environment of toxic or flammable substances~~. ~~A reduction in the use of toxic formulations would reduce~~ No change in

the possible exposure during routine transport, use or disposal of hazardous material from accidental releases of toxic substances is expected.

VIII.d) Government Code §65962.5 typically refers to a list of facilities that may be subject to Resource Conservation and Recovery Act (RCRA) permits. Although some of the 7,000 facilities regulated by PAR 1144 may be on such a list, facilities affected by the proposed new VOC content limits are not expected to be on this list, and would not typically generate large quantities of hazardous waste. For any facilities affected by the proposed amended rule that are on the Government Code §65962.5 list, it is anticipated that they would continue to manage any and all hazardous materials and hazardous waste, in accordance with federal, state and local regulations

VIII.e), & f) Since PAR 1144 ~~would reduce~~ with the exception of health risk from DMC which is addressed in the Air Quality Section of this EA, is not expected to change the amount of TACs through increase use of lower VOC content metalworking fluids, implementation of PAR 1144 is not expected to increase or create any new hazardous emissions in general~~, which could adversely affect public/private airports located in close proximity to the affected sites. PAR 1144 may increase or introduce the use of triethanolamine and monoethanolamine in small amounts. However, as stated above, the adverse impacts from the use of triethanolamine and monoethanolamine is expected to be less than significant to off-site receptors.~~ DMC is the only TAC that would be emitted in greater amounts because of PAR 1144. DMC is only expected to be emitted from a single facility. The closest airport or airstrip to this facility is Burbank Airport, which is nine miles away. Health risk was determined to be less than significant near the facility. At nine miles away, the health risk DMC usage at this facility is expected to be too small to accurately calculate. Therefore, ~~their use at facilities~~ adverse impacts from PAR 1144 near public/private airports or airfields is not expected to be significant.

VIII.g) PAR 1144 has no provisions that dictate the use of any specific metalworking fluid formulation. Operators who use metalworking fluids have the flexibility of choosing metalworking fluids that are best suited for their operations. With the exception of the use of DMC at a single facility, no change in direct-contact lubricants and non-naphthenic oil-based metal working fluids is expected. No change in toxicity is expected from the replacement of heavy naphthenic oils with light naphthenic oils in metalworking fluids. As described above, DMC is expected to have hazard characteristic similar that are similar to denatured alcohol, which it would replace. Hence, DMC is expected to be treated similarly to denatured alcohol in emergency response plans and emergency evacuation plans. Therefore, PAR 1144 is not expected to impair implementation of or physically interfere with an adopted emergency response plan or emergency evaluation plan. ~~If available, it is likely that operators would choose a compliant formulation that does not pose a substantial safety hazard. As shown in the discussion under item VIII.a), c), & i) above, it is expected that replacement metalworking fluid would generally be less toxic than currently used solvents. Increased or new use of metal working fluids that contain the only identified hazardous materials, triethanolamine and monoethanolamine, is expected to be less than significant.~~

In addition, Health and Safety Code §25506 specifically requires all businesses handling hazardous materials to submit a business emergency response plan to assist local administering agencies in the emergency release or threatened release of a hazardous material. Business emergency response plans generally require the following:

1. Identification of individuals who are responsible for various actions, including reporting, assisting emergency response personnel and establishing an emergency response team;
2. Procedures to notify the administering agency, the appropriate local emergency rescue personnel, and the California Office of Emergency Services;
3. Procedures to mitigate a release or threatened release to minimize any potential harm or damage to persons, property or the environment;
4. Procedures to notify the necessary persons who can respond to an emergency within the facility;
5. Details of evacuation plans and procedures;
6. Descriptions of the emergency equipment available in the facility;
7. Identification of local emergency medical assistance; and
8. Training (initial and refresher) programs for employees in:
    a. The safe handling of hazardous materials used by the business;
    b. Methods of working with the local public emergency response agencies;
    c. The use of emergency response resources under control of the handler; and
    d. Other procedures and resources that will increase public safety and prevent or mitigate a release of hazardous materials.

In general, every county or city and all facilities using a minimum amount of hazardous materials are required to formulate detailed contingency plans to eliminate, or at least minimize, the possibility and effect of fires, explosion, or spills. In conjunction with the California Office of Emergency Services, local jurisdictions have enacted ordinances that set standards for area and business emergency response plans. These requirements include immediate notification, mitigation of an actual or threatened release of a hazardous material, and evacuation of the emergency area.

~~Although~~ PAR 1144 ~~might~~ would not require ~~minor~~ modifications to emergency response plans ~~to eliminate the use of potentially hazardous solvents~~, it is not anticipated that PAR 1144 would impair implementation of or physically interfere with an adopted or modified emergency response plan or emergency evacuation plan.

VIII.h) Since the use of PAR 1144 compliant metalworking fluids would generally be expected to occur at 7,000 existing industrial sites in urban areas where wildlands are typically not prevalent, risk of loss or injury associated with wildland fires is not expected as a result of implementing PAR 1144.

In conclusion, potentially significant adverse hazard or hazardous material impacts resulting from adopting and implementing PAR 1144 are not expected and will not be considered further. No mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant Impact	No Impact
IX.	**HYDROLOGY AND WATER QUALITY.** Would the project:			
a)	Violate any water quality standards or waste discharge requirements?	☐	☑	☐
b)	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g. the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☑	☐
c)	Substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or offsite?	☐	☐	☑
d)	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☑
e)	Otherwise substantially degrade water quality?	☐	☑	☐
f)	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☑
g)	Place within a 100-year flood hazard area structures which would impede or redirect flood flaws?	☐	☐	☑
h)	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☑

		Potentially Significant Impact	Less Than Significant Impact	No Impact
i)	Inundation by seiche, tsunami, or mudflow?	☐	☐	☑
j)	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☑	☐
k)	Require or result in the construction of wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☑	☐
l)	Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☑
m)	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed, the construction of which could cause significant environmental effects.	☐	☑	☐
n)	Require in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☑	☐

Significance Criteria

Potential impacts on water resources will be considered significant if any of the following criteria apply:

Water Quality:

- The project will cause degradation or depletion of ground water resources substantially affecting current or future uses.
- The project will cause the degradation of surface water substantially affecting current or future uses.
- The project will result in a violation of National Pollutant Discharge Elimination System (NPDES) permit requirements.
- The capacities of existing or proposed wastewater treatment facilities and the sanitary sewer system are not sufficient to meet the needs of the project.

- The project results in substantial increases in the area of impervious surfaces, such that interference with groundwater recharge efforts occurs.
- The project results in alterations to the course or flow of floodwaters.

Water Demand:
- The existing water supply does not have the capacity to meet the increased demands of the project, or the project would use a substantial amount of potable water.
- The project increases demand for water by more than five million gallons per day.

Discussion
IX.a), e), j) & k)

Direct-contact Lubricant
Based on the sales weighted VOC content, it is likely that existing direct-contact lubricants would continue to be used to comply with PAR 1144. Therefore, no change in water use or quality is expected.
~~Table 1-4 presents an existing inventory of 211,000 gallons of direct-contact lubricant per year. Based on discussions with the affected industry, SCAQMD assumes that 20 percent of the existing 211,000 gallons per year could be replaced by water-dilutable direct-contact lubricant to comply with PAR 1144. Twenty percent of 211,000 gallons per year would be 42,200 gallons of water-dilutable direct-contact lubricant per year. The water-dilutable direct-contact lubricant concentrates can be diluted in ratios up to 40 parts water to one part concentrate, which would be 97.5 percent water. If mixed at ratio of 40 to one, 41,145 gallons of water per year could be used to comply with direct-contact lubricant VOC content limits in PAR 1144.~~

General Metalworking Fluids
The VOC content limits proposed for metalworking fluids are expected to result in the replacement or reformulation of light naphthenic oil-based metalworking fluids with heavy naphthenic oil-based metalworking fluids. No additional water is expected to be needed to because of the reformulation with heavy naphthenic oil-based metalworking fluids. Since existing non- naphthenic oil-based metalworking fluids have a sales weight VOC content below the proposed VOC content limits of 75 and 130 grams per liter, no additional replacement or reformulation is expected to be needed to comply with PAR 1144. Therefore, no change to water use or water quality from metalworking fluid requirements is expected.

No water is expected to be associated with the use of DMC in CNC machinery, so no adverse water impacts are expected from the use of DMC.

~~Table 1-4 presents and existing inventory of 1,520,900 gallons of naphthenic based metal working fluids per year (1,472,000 gallons of naphthenic based metal working fluids and 48,900 gallons of light naphthenic oil). Based on discussions with the affected industry, SCAQMD assumes that 20 percent of the existing 1,520,900 gallons per year could be replaced by water-dilutable metal working fluids to comply with PAR 1144. Twenty percent of 1,520,900 gallons per year would be 304,180 gallons of water-dilutable metal working fluid per year. The water-dilutable metal working fluid concentrates can be diluted in ratios up to 40 parts water to one part concentrate, which would be 97.5 percent water. If mixed at ratio of 40 to one, 296,575 gallons of water per year could be used to comply with direct-contact lubricant VOC content limits in PAR 1144.~~

Metal Protecting Fluids ~~Rust Inhibitor~~
Existing military specified preservatives are expected to comply with PAR 1144. Therefore, no additional water use is expected to be needed to comply with the military specified preservatives VOC content limits PAR 1144.

~~Conclusion~~
~~Based on the information above a total of 337,720 gallons per year of water (41,145 gallons of water per year from water dilutable direct contact lubricant and 296,575 gallons of water per year from water dilutable metal working fluid) may be needed to comply with PAR 1144. Once expended the water dilutable metal working fluid would be considered an aqueous hazardous waste and sent in 55 gallon barrels to appropriate hazardous treatment facilities to remove hazardous constituents. The oils, grease and metal would be removed and the pH of the water would be adjusted. After treatment the water would be sent to publicly owned treatment works (POTW) facilities.~~

~~The capacity of POTWs in the district to treat wastewater is approximately 2,000,000,000 gallons per day (SCAG 2005).[9] It is expected that POTWs have the capacity to treat and additional 337,720 gallons per day (0.02 percent) of sewage generated by PAR 1144. Therefore, PAR 1144 is not expected to violate any water quality standard or waste discharge requirement, degrade water quality or exceed the wastewater treatment requirements of the applicable Regional Water Quality Control Board.~~

IX.b), & n) PAR 1144 is not expected to substantially deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. PAR 1144 would not ~~significantly~~ increase demand for water from existing entitlements and resources and would not require new or expanded entitlements because no change in water use or quality is expected ~~the amount of water used would be very small (337,720 gallons of water per year, which is 1,299 gallons of water per day based on a 260 hour work year) compared to the significance threshold of five million gallons per day~~. Therefore, no water demand impacts are expected as the result of implementing the proposed project.

IX c), d), & l) Operations affected by PAR 1144 are housed within structures that already have stormwater structures in place, as necessary. All PAR 1144 related operations are expected to occur within the existing structures, therefore, PAR 1144 is not expected to create or contribute to additional runoff water. Therefore, PAR 1144 would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

As detailed above, the proposed rule is not expected to require ~~more than 337,720 gallons per year of~~ any additional wastewater disposal capacity, violate any water quality standard or wastewater discharge requirements, or otherwise substantially degrade water quality, because no additional wastewater is expected ~~would be collected and transferred to appropriate reclamation or disposal facilities~~. As a result, no changes to storm water runoff, drainage patterns,

[9] SCAG, 2004 Regional Transportation Plan Program Environmental Impact Report, http://www.scag.ca.gov/RTPpeir2004/

groundwater characteristics, or flow are expected. Therefore, potential adverse impacts to drainage patterns, etc., are not expected as a result of implementing PAR 1144.

IX.f), g), h) & i) PAR 1144 would not require any development or construction of additional structures; therefore, PAR 1144 is not expected to generate construction of any new structures in 100-year flood areas as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood delineation map. As a result, PAR 1144 is not expected to expose people or structures to new significant flooding risks. Compliance with PAR 1144 at the 7,000 existing affected facilities will not affect any existing risks from flood, inundation, etc. Consequently, PAR 1144 would not affect in any way any potential existing flood hazards inundation by seiche, tsunami, or mud flow that may already exist relative to the 7,000 existing affected facilities.

IX. m) PAR 1144 would not require any new development or require modifications to buildings or other structures to comply with the proposed VOC content limits for direct-contact lubricants, metalworking fluids and rust inhibitors.

~~The soluble, semi-synthetic and synthetic metal working fluids have low VOC contents because of the existing high water content of those fluids. The affected metal working fluids are typically sold in concentrate from and the water is added at the metal working facilities. PAR 1144 would increase the amount of water usage from product reformulation. It is estimated that approximately 337,720 gallons of water per year (1,299 gallons of water per day) would be used with reformulate products to comply with PAR 1144.~~

~~Since 1,299 gallons per day is less than the significance threshold of five million gallons per day, sufficient water supplies are expected to be available.~~ No additional water use is expected to comply with PAR 1144. As a result, implementing PAR 1144 would not require the construction of additional water resource, be the need for new or expanded water entitlements, or an alteration of drainage patterns. Since the proposed project is not expected to require additional water ~~uses less than five million gallons of water~~, the project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge.

Based upon the above considerations, significant hydrology and water quality impacts are not expected from the implementation of PAR 1144 and will not be further analyzed in this ~~Draft~~ Final EA. Since no significant hydrology and water quality impacts were identified, no mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant Impact	No Impact
X.	**LAND USE AND PLANNING.** Would the project:			
a)	Physically divide an established community?	☐	☐	☑
b)	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☑
c)	Conflict with any applicable habitat conservation or natural community conservation plan?	☐	☐	☑

Significance Criteria

Land use and planning impacts will be considered significant if the project conflicts with the land use and zoning designations established by local jurisdictions.

Discussion

X.a) PAR 1144 would not require any new development or require modifications to buildings or other structures to comply with the proposed VOC content limits for direct-contact lubricants~~,~~ and metalworking fluids ~~and rust inhibitors~~. All of the affected activities occur within existing structures. Therefore, PAR 1144 does not include any components that would require physically dividing an established community.

X.b) & c) There are no provisions in PAR 1144 that would affect land use plans, policies, or regulations. Land use and other planning considerations are determined by local governments and no land use or planning requirements would be altered by reducing the VOC content of affected metalworking fluids. Therefore, PAR 1144 would not affect in any habitat conservation or natural community conservation plans, agricultural resources or operations, and would not create divisions in any existing communities. Present or planned land uses in the region would not be significantly adversely affected as a result of implementing the proposed amended rule.

Based upon these considerations, significant adverse land use and planning impacts are not expected from the implementation of PAR 1144 and will not be further analyzed in this ~~Draft~~ Final EA. Since no significant land use and planning impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
XI. MINERAL RESOURCES. Would the project:			
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☑
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☑

Significance Criteria

Project-related impacts on mineral resources will be considered significant if any of the following conditions are met:

- The project would result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.
- The proposed project results in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Discussion

XI.a) & b) There are no provisions in PAR 1144 that would result in the loss of availability of a known mineral resource of value to the region and the residents of the state, or of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan because compliance with PAR 1144 does not require mineral resources such as sand, gravel, etc.

Based upon the above considerations, significant adverse mineral resources impacts are not expected from the implementation of PAR 1144 and will not be further analyzed in this ~~Draft~~ Final EA. Since no significant mineral resources impacts were identified, no mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant Impact	No Impact
XII.	**NOISE.** Would the project result in:			
a)	Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☑
b)	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☑
c)	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☑
d)	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☑
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☑
f)	For a project within the vicinity of a private airship, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☑

Significance Criteria

Impacts on noise will be considered significant if:

- Construction noise levels exceed the local noise ordinances or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three decibels (dBA) at the site boundary. Construction noise levels will be considered significant if they exceed federal Occupational Safety and Health Administration (OSHA) noise standards for workers.
- The proposed project operational noise levels exceed any of the local noise ordinances at the site boundary or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three dBA at the site boundary.

Discussion

XII.a) PAR 1144 would only affect VOC content of metalworking fluids at 7,000 existing facilities. PAR 1144 would not require any new development or require modifications to buildings or other structures to comply with the proposed amended rule. All of the affected activities occur within existing structures. Replacement of solvents to meet VOC requirements of PAR 1144 are not expected to affect operations at affected facilities. Ducting an existing DNC machine to existing ductwork is not expected to generate more noise or groundborne vibration than existing routine maintenance at the affected facility. Thus, the proposed project is not expected to expose persons to the generation of excessive noise levels above current facility levels. It is expected that any facility affected by PAR 1144 would continue complying with all existing local noise control laws or ordinances.

In commercial environments Occupational Safety and Health Administration (OSHA) and California-OSHA have established noise standards to protect worker health. It is expected that operators at affected facilities will continue complying with applicable OSHA or Cal/OSHA noise standards, which would limit noise impacts to workers, patrons and neighbors.

XII.b) PAR 1144 is not anticipated to expose people to, or generate excessive groundborne vibration or groundborne noise levels since complying with PR 1144 is not expected to alter operations at affected facilities. Therefore, any existing noise or vibration levels at affected facilities are not expected to change as a result of implementing PAR 1144. Since existing operations are not expected to generate excessive groundborne vibration or noise levels, and PAR 1144 is not expected to alter physical operations, no groundborne vibration or noise levels is expected from the proposed amended rule.

XII.c) A permanent increase in ambient noise levels at the 7,000 existing affected facilities above existing levels as a result of implementing the proposed project is unlikely to occur because the physical operations are not expected to change greatly at affected facilities. The existing noise levels are unlikely to change and raise ambient noise levels in the vicinities of the existing facilities to above a level of significance, because changes to VOC contents in direct-contact-lubricants, metalworking fluids and rust inhibitors and associated cleaning equipment are not expected to generate higher noise levels than are already occurring.

XII.d) No increase in periodic or temporary ambient noise levels in the vicinity of affected facilities above levels existing prior to PAR 1144 is anticipated because the proposed project would not require construction or substantial changes to metalworking fluid processes. As indicated earlier, construction noise levels are expected to be minimal and operational noise levels are expected to be equivalent to existing noise levels.

XII.e) & f) Even if an affected facility is located near a public/private airport, there are no new noise impacts expected from any of the existing facilities as a result of complying with the proposed project. Similarly, any existing noise levels at affected facilities are not expected to increase appreciably. Thus, PAR 1144 is not expected to expose people residing or working in the vicinities of public airports to excessive noise levels.

Based upon these considerations, significant adverse noise impacts are not expected from the implementation of PAR 1144 and are not further evaluated in this ~~Draft~~ Final EA. Since no significant noise impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
XIII. POPULATION AND HOUSING. Would the project:			
a) Induce substantial growth in an area either directly (for example, by proposing new homes and businesses) or indirectly (e.g. through extension of roads or other infrastructure)?	☐	☐	☑
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☑
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☑

Significance Criteria

Impacts of the proposed project on population and housing will be considered significant if the following criteria are exceeded:
- The demand for temporary or permanent housing exceeds the existing supply.
- The proposed project produces additional population, housing or employment inconsistent with adopted plans either in terms of overall amount or location.

Discussion

XIII.a) The proposed project is not anticipated to generate any significant adverse effects, either direct or indirect, on the district's population or population distribution as no additional workers are anticipated to be required for affected facilities to comply with the proposed amendments. Human population within the jurisdiction of the SCAQMD is anticipated to grow regardless of implementing PAR 1144. As such, PAR 1144 would not result in changes in population densities or induce significant growth in population.

XIII.b) & c) Because the proposed project affects VOC contents of direct-contact lubricants~~,~~ and metalworking fluids ~~and rust inhibitors~~, PAR 1144 is not expected to result in the creation of any industry that would affect population growth, directly or indirectly, induce the construction of single- or multiple-family units, or require the displacement of people elsewhere.

Based upon these considerations, significant adverse population and housing impacts are not expected from the implementation of PAR 1144 and are not further evaluated in this ~~Draft~~ Final

EA. Since no significant population and housing impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
XIV. PUBLIC SERVICES. Would the proposal result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:			
a) Fire protection?	☐	☐	☑
b) Police protection?	☐	☐	☑
c) Schools?	☐	☐	☑
d) Parks?	☐	☐	☑
e) Other public facilities?	☐	☐	☑

Significance Criteria

Impacts on public services will be considered significant if the project results in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response time or other performance objectives.

Discussion

XIV.a) & b) PAR 1144 would only affect VOC content of metalworking fluids at 7,000 existing facilities. PAR 1144 would not require any new development or require modifications to buildings or other structures to comply with the proposed amended rule. All of the affected activities occur within existing structures. Because compliant products are currently available, many facility operators currently use PAR 1144 compliant materials. As shown in the Section VIII - Hazards and Hazardous Material section of this ~~Draft~~ Final EA, the use of PAR 1144 compliant metalworking fluids are not expected to generate significant explosion or fire hazard impacts, because compliant products are no more flammable than conventional fluids.

Therefore, PAR 1144 is not expected to increase the chances for fires or explosions requiring a response from local fire departments~~, but would more than likely reduce the chances of fires or explosions~~. PAR 1144 is not expected to have any adverse effects on local police departments for the following reasons. Police would be required to respond to accidental releases of

hazardous materials during transport. Since hazards impacts from implementing PAR 1144 were concluded to be less than significant, potential impacts to local police departments are also expected to be less than significant.

XIV.c) & d) As indicated in discussion under item XIII. Population and Housing, implementing PAR 1144 would not induce population growth or dispersion because no additional workers are expected to be needed at the 7,000 existing affected facilities. Therefore, with no increase in local population anticipated as a result of adopting and implementing PAR 1144, additional demand for new or expanded schools or parks is also not anticipated. As a result, no significant adverse impacts are expected to local schools or parks.

XIV.e) Besides building permits, there is typically no need for other government services at affected facilities. The proposal would not result in the need for new or physically altered government facilities and, as a result, is not expected to affect in any way acceptable service ratios, response times, or other performance objectives. There would be no increase in population and, as a result of implementing the proposed project, no need for physically altered government facilities.

Based upon these considerations, significant adverse public services impacts are not expected from the implementation of PAR 1144 and are not further evaluated in this ~~Draft~~ Final EA. Since no significant public services impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
XV. RECREATION.			
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☑
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☑

Significance Criteria

Impacts to recreation will be considered significant if:
- The project results in an increased demand for neighborhood or regional parks or other recreational facilities.

- The project adversely affects existing recreational opportunities.

Discussion

XV.a) & b) As discussed under "Land Use and Planning" above, there are no provisions in the PAR 1144 that would affect land use plans, policies, or regulations. Land use and other planning considerations are determined by local governments and no land use or planning requirements will be altered by the proposed amended rule. The proposed project would not increase the demand for, or use of existing neighborhood and regional parks or other recreational facilities or require the construction of new or expansion of existing recreational facilities that might create an adverse physical effect on the environment because it will not directly or indirectly increase or redistribute population.

Based upon these considerations, significant recreation impacts are not expected from the implementation of PAR 1144 and are not further evaluated in this ~~Draft~~ Final EA. Since no significant recreation impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	Less Than Significant Impact	No Impact
XVI. SOLID/HAZARDOUS WASTE. Would the project:			
a) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☑
b) Comply with federal, state, and local statutes and regulations related to solid and hazardous waste?	☐	☐	☑

Significance Criteria

The proposed project impacts on solid/hazardous waste will be considered significant if the following occurs:

- The generation and disposal of hazardous and non-hazardous waste exceeds the capacity of designated landfills.

Discussion

XVI.a) Landfills are permitted by the local enforcement agencies with concurrence from the California Integrated Waste Management Board (CIWMB). Local agencies establish the maximum amount of solid waste which can be received by a landfill each day and the operational life of a landfill. PAR 1144 is not expected to generate any solid waste; therefore, would not affect solid waste landfills.

XVI.b) It is assumed that existing metalworking facility operators currently dispose of hazardous waste from the waste of direct-contact lubricants, metalworking fluids and/or waste rust inhibitors. It is further assumed that facility operators at these affected facilities comply with all applicable local, state, or federal waste disposal regulations.

With the exception of the replacement of denatured alcohol with DMC at one affected facility and the replacement of light naphthenic oils with 60 SUS naphthenic oils, no reformulation or change in direct-contact lubricants, metalworking fluids and rust inhibitors is expected to comply with PAR 1144. DMC would replace denatured alcohol in the same amount. Light naphthenic oils are also expected be replaced with 60 SUS naphthenic oils on a one to one basis. Both replacements are expected to have similar hazard characteristics to the solvents that they are replacing.

Since the volume of the reformulation or replacement direct-contact lubricants, metalworking fluids and rust inhibitors is not expected to be different than the existing volume of direct-contact lubricants~~,~~ and metalworking fluids~~ and rust inhibitors~~, PAR 1144 is not expected to substantially change hazardous waste handling and disposal volumes.

Metalworking facility operators currently dispose of water and solvent based waste direct-contact lubricants, metalworking fluids and/or waste rust inhibitors with contamination (i.e., oil, grease and trace amounts of metals) as hazardous waste. At the disposal facility, large metalworking shavings or chippings in disposed direct-contact lubricants, metalworking fluids and rust inhibitors can be separated and recycled. Fine metal shavings in direct-contact lubricants, metalworking fluids and/or waste rust inhibitors will form a foam called swarf, which is skimmed off for disposal as hazardous waste. Used direct-contact lubricants, metalworking fluids and rust inhibitors can be recycled and reused. Used wastewater would be sent to POTW facilities (see Environmental Topic IX. Hydrology and Water Quality). Tramp or sump oil is unwanted oil that mixes with direct-contact in lubricants, metalworking fluids and rust inhibitors and is skimmed off for disposal as hazardous waste.

Direct-contact Lubricants and Metalworking Fluids

Existing direct-contact lubricants are expected to meet the ~~interim~~ VOC content limits; therefore, no change in operations is expected. ~~Some affected facility owners/operators may need to replace existing direct-contact lubricants with water-dilutable or vegetable based lubricants to meet the final VOC content limits.~~

~~Large metal shavings or chippings in disposed of replacement or reformulated direct-contact lubricants are expected to still be separated and recycled. Since the metal shavings or clippings are related to the parts manufactured and not to the direct-contact lubricants, the amount collected is not expected to change. For the same reason, the amount of swarf disposed of is not expected to change as the new VOC limit requirements are not expected to change the production level at the affected facilities and the fluid quantity is not expected to change between existing and reformulated products as used. The ratio of water to solvent in metal working fluid oils may change. Used direct-contact lubricants would be recycled. Used wastewater would be sent to POTW facilities (see Environmental Topic IX. Hydrology and Water Quality). Tramp or sump oil is expected to be skimmed off and disposed of as hazardous waste. The amount of~~

~~tramp or sump oil is expected to be similar since the volumes of replacement or reformulated direct-contact lubricants are expected to be similar~~.

General Metalworking Fluids

General metalworking fluids are expected to meet the ~~interim~~ VOC content limits for both categories with the exception of light naphthenic oils (40 SUS) would need to be replaced with 60 SUS naphthenic oils. Waste light naphthenic oils and 60 SUS naphthenic oils are expected to be disposed of in a similar matter. ~~Affected facility owners/operators may need to replace existing naphthenic oils with paraffinic oils, water-dilutable oils or vegetable based oils. Metal shavings or chippings in disposed replaced or reformulated fluids containing paraffinic oils, water-dilutable oils or vegetable based oils are expected to still be separated and recycled. Since the metal shavings or clippings are related to the parts manufactured and not to the existing naphthenic working fluid; or replacement/ reformulated paraffinic oils, water-dilutable oils or vegetable based oils; the amount collected is not expected to change. For the same reason, the amount of swarf disposed of is not expected to change. The ratio of water to solvent used metal working fluid oils may change. Used metal working fluid oils would be recycled and reused. Used wastewater would be sent to POTW facilities (see Environmental Topic IX. Hydrology and Water Quality). Tramp or sump oil is expected to be skimmed off and disposed as hazardous waste.~~ The amount of tramp or sump oil is expected to be similar since the volumes of replacement or reformulated direct-contact lubricants are expected to be similar.

DMC would replace denatured alcohol at one affected facility. As detailed in the Hazards and Hazardous Materials section of this EA, DMC and denatured alcohol have similar hazardous properties. DMC is expected to be a one to one replacement, so the amount of hazardous waste generated is also expected to be the same. Waste DMC would be removed by the same company that handles the denatured alcohol. DMC is expected to be disposed in the same fashion as the denatured alcohol. Because DMC and denatured alcohol is expected to be disposed in similar amounts in the same fashion, no new hazardous waste adverse impacts are expected. Since DMC and denatured alcohol are both hazardous solvents, no impacts to solid waste disposal facilities are expected.

Metal Protecting Fluids ~~Rust Inhibitor~~

Existing military specified rust preservatives are expected to meet the new VOC content limit. Therefore, since complaint military specified rust preservatives are currently used no change in hazardous waste is expected from the new VOC content limit for military specified rust preservatives.

SCAQMD staff also believes that affected metalworking operators would continue to comply with all applicable local, state, or federal waste disposal regulations regarding hazardous waste containing oil, grease and trace amounts of metals.

There are three Class I landfills in California: Chemical Waste Management Kettleman Hills in Kettleman City, CA; Clean Harbors Buttonwillow in Buttonwillow, CA, and Clean Harbors Westmorland in Westemorland, CA. Chemical Waste Management Kettleman Hills has a remaining capacity of 7,360,000 cubic yards with an estimated closure date of 2037. Clean Harbors Buttonwillow and Westmorland have a remaining capacity of 12,731,000 cubic yards with an estimated closure date of 2036.

The amount of solid hazardous waste removed from replacement or reformulated direct-contact lubricants and metalworking fluids at hazardous waste landfill beyond what is currently disposed is expected, because the amount of oil, grease and metals in the replacement or reformulated ~~direct-contact lubricants and~~ metalworking fluids is expected to be the same as in existing ~~direct-contact lubricants,~~ metalworking fluids waste from current metalworking operations. Therefore, based on the existing capacity and the fact that PAR 1144 is not expected to change the amount of hazardous waste disposed, PAR 1144 is not expected to result in the disposal of hazardous wastes that would exceed the capacity of designated hazardous waste landfills.

Based on these considerations, PAR 1144 is not expected to significantly increase the volume of solid or hazardous wastes disposed at existing municipal or hazardous waste disposal facilities or require additional waste disposal capacity. Further, implementing PAR 1144 is not expected to interfere with any affected facility's ability to comply with applicable local, state, or federal waste disposal regulations. Since no solid/hazardous waste impacts were identified, no mitigation measures are necessary or required.

	Potentially Significant Impact	**Less Than Significant Impact**	**No Impact**
XVII. TRANSPORTATION/TRAFFIC. Would the project:			
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☐	☑
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☑
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☑
d) Substantially increase hazards due to a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?	☐	☐	☑
e) Result in inadequate emergency access or?	☐	☐	☑

		Potentially Significant Impact	Less Than Significant Impact	No Impact
f)	Result in inadequate parking capacity?	☐	☐	☑
g)	Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g. bus turnouts, bicycle racks)?	☐	☐	☑

Significance Criteria

Impacts on transportation/traffic will be considered significant if any of the following criteria apply:

- Peak period levels on major arterials are disrupted to a point where level of service (LOS) is reduced to D, E or F for more than one month.
- An intersection's volume to capacity ratio increase by 0.02 (two percent) or more when the LOS is already D, E or F.
- A major roadway is closed to all through traffic, and no alternate route is available.
- There is an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system.
- The demand for parking facilities is substantially increased.
- Water borne, rail car or air traffic is substantially altered.
- Traffic hazards to motor vehicles, bicyclists or pedestrians are substantially increased.
- The need for more than 350 employees
- An increase in heavy-duty transport truck traffic to and/or from the facility by more than 350 truck round trips per day
- Increase customer traffic by more than 700 visits per day.

Discussion

XVII.a) & b)

It is expected that owner/operators may need to replace or reformulate metalworking fluids to comply with PAR 1144. SCAQMD staff does not expect~~s~~ that reformulated solvents would have different sources than existing solvents.

Direct-contact Lubricants

~~Existing direct-contact lubricants are provided by suppliers in the Midwest.~~ Existing direct-contact lubricants currently meet the ~~interim~~ VOC content limits proposed in PAR 1144; therefore, no change in direct-contact lubricants is expected. Since there is no change in direct-contact lubricant usage, no change in transportation is expected. ~~To comply with the final VOC content limit for direct-contact, some owners/operators are expected to reformulate with water-dilutable oils, vegetable oils or paraffinic oils. Water-dilutable oils or vegetable oils are provided by suppliers in the Midwest. Paraffinic oils would be provided by suppliers in Richmond, California or Texas, which is closer than the Midwest. Since the existing and replacement/reformulated direct-contact lubricants are supplied from the same or closer areas, no change in traffic or transportation is expected to comply with the final VOC content limits for direct-contact lubricants.~~

General Metalworking Fluids
Naphthenic oil is currently provided from manufacturers and supplier in Bakersfield, California. To comply with the ~~interim~~ VOC content limit in PAR 1144, owners/operators are expected to switch from light naphthenic oil (40SUS) to 60 SUS naphthenic oil. Both grades of naphthenic oil are supplied by the same refinery in Bakersfield. Therefore, no change in traffic or transportation is expected to comply with the ~~interim~~ VOC content limits for general metalworking fluids.

~~To comply with the final VOC content limit in PAR 1144, naphthenic oils in metal working fluids are expected to be replaced with paraffinic oils, water-dilutable oils or vegetable oils. Paraffinic oils can be obtained from refineries in Richmond, California or Texas. Naphthenic oil is typically delivered by tanker trucks. However, paraffinic oil is expected to be delivered by rail. Therefore, PAR 1144 is expected to reduce the number of diesel trucks on the road (approximately 500 diesel truck trips per year). PAR 1144 is expected to require 68 additional railcars (21 from out of state and 37 from Richmond, California) per year. These additional rail cars are not expected to increase the number of trains, but are expected to be carried by existing locomotives. Given that affected facilities are dispersed throughout the district, it is unlikely that truck or rail traffic from different affected facilities would overlap. As a result, implementing PAR 1144 is not expected to substantially affect the level of service (LOS) of any intersection in the district and could increase the LOS since less diesel trucks would be needed.~~

Metal Protecting Fluids ~~Rust Inhibitor~~
Existing military specified preservatives meet the proposed VOC content limit in PAR 1144. Therefore, no change in traffic or transportation is expected to comply with the VOC content limits for military specified preservative.

Therefore, PAR 1144 is not expected to adversely affect traffic or transportation systems. The proposed amended rule would not change or substantially increase operational transportation demands or services. Therefore, the implementation of PAR 1144 is not expected to significantly adversely affect circulation patterns on local roadways or the level of service at intersections near affected facilities.

XVII.c) Since PAR 1144 would not require substantial construction or operations outside existing structures, it would not affect air traffic. Further, PAR 1144 would not affect in any way air traffic in the region as no direct-contact lubricants, metalworking fluids or rust inhibitors would need to be transported by plane.

XVII.d) Since PAR 1144 only affects VOC contents of direct-contact lubricants~~,~~ and metalworking fluids ~~and rust inhibitors~~, no offsite modifications to roadways are anticipated for the proposed project that would result in additional design hazards or incompatible uses.

XVII.e) Since PAR 1144 only affects VOC contents of direct-contact lubricants~~,~~ and metalworking fluids ~~and rust inhibitors~~ at 7,000 existing facilities, no changes are expected to emergency access at or in the vicinity of the affected facilities. The proposed project is not expected to adversely impact emergency access because it primarily requires replacement of non-compliant direct-contact lubricants~~,~~ and metalworking fluids ~~and rust inhibitors~~ with

compliant products. Using compliant products is not expected to substantially modify a facility's physical layout that would affect emergency access.

XVII.f) Since PAR 1144 only affects VOC contents of direct-contact lubricants, metalworking fluids and rust inhibitors at 7,000 existing facilities, no changes are expected to the parking capacity at or in the vicinity of the affected facilities. PAR 1144 is not expected to require additional workers, so additional parking capacity will not be required. Therefore, the project is not expected to adversely impact on- or off-site parking capacity.

XVII.g) Since PAR 1144 only affects VOC contents of direct-contact lubricants~~,~~ and metalworking fluids ~~and rust inhibitors~~ at 7,000 existing facilities, the implementation of PAR 1144 would not result in conflicts with alternative transportation, such as bus turnouts, bicycle racks, et cetera.

Based upon these considerations, PAR 1144 is not expected to generate significant adverse transportation/traffic impacts and, therefore, this topic will not be considered further. Since no significant transportation/traffic impacts were identified, no mitigation measures are necessary or required.

		Potentially Significant Impact	Less Than Significant Impact	No Impact
XVII.	**MANDATORY FINDINGS OF SIGNIFICANCE**			
a)	Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☑
b)	Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)	☐	☐	☑

	Potentially Significant Impact	Less Than Significant Impact	No Impact
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☑	☐

XVIII.a) As discussed in the "Biological Resources" section, PAR 1144 is not expected to significantly adversely affect plant or animal species or the habitat on which they rely because PAR 1144 affects the VOC contents of direct-contact lubricants~~,~~ and metalworking fluids ~~and rust inhibitors~~ used in metalworking operations, which typically occur in existing structures at 7,000 existing affected facilities. The 7,000 affected facilities are located at sites that have already been greatly disturbed and that currently do not support such habitats. PAR 1144 is not expected to induce construction of any new land use projects that could affect biological resources.

XVIII.b) Based on the foregoing analyses, cumulative impacts in conjunction with other projects that may occur concurrently with or subsequent to the proposed project are not expected to adversely impact any environmental topic. Related projects to the currently proposed project include existing and proposed amended rules and regulations, as well as AQMP control measures, which produce emission reductions from most industrial and commercial sectors. Furthermore, because PAR 1144 does not generate project-specific impacts, cumulative impacts are not considered to be "cumulatively considerable" as defined by CEQA guidelines §15065(a)(3). For example, the environmental topics checked 'No Impact' (e.g., aesthetics, agriculture resources, biological resources, cultural resources energy, geology and soils, land use and planning, mineral resources, noise, population and housing, public services, recreation, solid/hazardous waste and transportation and traffic) would not be expected to make any contribution to potential cumulative impacts whatsoever. For the environmental topic checked 'Less than Significant Impact' (e.g., air quality, hazards and hazardous materials, and hydrology and water quality), the analysis indicated that project impacts would not exceed any project-specific significance thresholds. These conclusions are based on the fact that the analyses for each of these environmental areas concluded that the incremental effects of the proposed project would be minor and, therefore, not considered to be cumulatively considerable. Also, in the case of air quality impacts, the net effect of implementing the proposed project with other proposed amended rules and regulations, and AQMP control measures is an overall reduction in district-wide emissions, thus, contributing to the attainment of state and national ambient air quality standards. Therefore, it is concluded that PAR 1144 has no potential for significant cumulative or cumulatively considerable impacts in any environmental areas.

XVIII.c) Based on the foregoing analyses, PAR 1144 is not expected to cause significant adverse effects to human beings. Significant adverse air quality impacts are not expected from the implementation of PAR 1144. Based on the preceding analyses, no significant adverse impacts to aesthetics, agriculture resources, biological resources, cultural resources, energy, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, solid/hazardous waste and transportation and traffic are expected as a result of the implementation of PAR 1144.

As discussed in items I through XVIII above, the proposed project would have no potential to cause significant adverse environmental effects.

APPENDIX A

PROPOSED AMENDED RULE 1144

In order to save space and avoid repetition, please refer to the latest version of Proposed Amended Rule 1144 located elsewhere in the rule adoption package.

The version "PAR 1144 012010" of the proposed amended rule was circulated with the Draft Environmental Assessment that was released on February 16, 2010 for a 30-day public review and comment period ending March 17, 2010.

Original hard copies of the Draft Environmental Assessment, which include the version "PAR 1144 012010" of the proposed rule, can be obtained through the SCAQMD Public Information Center at the Diamond Bar headquarters or by calling (909) 396-2039.

APPENDIX B

ASSUMPTIONS AND CALCULATIONS

Table B-1
Diemethyl Carbonate Non-Carcinogenic Health Risk Analysis

Tier II - Non-carcinogenic Chronic Health Risk Evaluation of Dimethyl Carbonate

Receptor	Total DMC Usage, gal/yr	DMC Density, lb/gal	DMC Emissions, ton/year	X/Q	MET	DMC Chronic REL, ug/m3	DMC Chronic HI
Sensitive	327	8.92	1.5	4.51	0.51	5,500	0.0006
Off-site Worker	327	8.92	1.5	51.18	0.51	5,500	0.0069

Tier II - Non-carcinogenic Acute Health Risk Evaluation of Dimethyl Carbonate

Receptor	Total DMC Usage, gal/yr	DMC Density, lb/gal	DMC Emissions, lb/day	DMC Emissions, lb/hr	X/Qhr	DMC Acute REL, ug/m3	DMC Acute HI
Sensitive	327	8.92	11.2	1.4	373.5	18,000	0.03
Off-site Worker	327	8.92	11.2	1.4	2,000	18,000	0.16

SCAQMD, Risk Assessment Procedures for Rules 1401 and 212, Package L, July 2008.
MET - Downtown Los Angeles
X/Q values estimated at 100 meters downwind distance
Dimethyl Carbonate (DMC) Usage, gal/year from facility
DMC Emissions, ton/year= (DMC Usage, gal/year x DMC Density, lb/gal)/(2,000 lb/ton)
DMC Emissions, lb/day = (DMC Usage, gal/year x DMC Density, lb/gal)/(260 day/year)/(8 hour/day)
DMC Acute and Chronic REL from OEHHA (interim values)
DMC Chronic HI = (Emissions, ton/year x (X/Q) x MET)/Chronic REL, ug/m3
DMC Acute HI = (Emissions, lb/hr x (X/Q)hr)/Acute REL, ug/m3

Table B-2
AERMOD Input File for Diemethyl Carbonate Carcinogenic Health Risk Analysis

```
**
**************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 6.4.0
** Lakes Environmental Software Inc.
** Date: 5/13/2010
** File: C:\Users\jkoizumi\Documents\Lakes\ISCARMOD\2010\NamePlate\NNP\NNP.ADI
**
**************************************
**
**
**************************************
** AERMOD Control Pathway
**************************************
**
**
CO STARTING
   TITLEONE C:\Users\jkoizumi\Documents\Lakes\ISCARMOD\2010\NamePlate\NNP\NNP.is
   MODELOPT  CONC NODRYDPLT NOWETDPLT FLAT ELEV
   AVERTIME PERIOD
   URBANOPT 9862049 Los_Angeles
   POLLUTID OTHER
   RUNORNOT RUN
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION STCK1 POINT 384922.589 3775005.071 110.830
** Source Parameters **
   SRCPARAM STCK1 1.0 11.278 0.000 0.03032 2.438

** Building Downwash **
   BUILDHGT STCK1       10.67    10.67    10.67    10.67    10.67    10.67
   BUILDHGT STCK1       10.67    10.67    10.67    10.67    10.67    10.67
   BUILDHGT STCK1       10.67    10.67    10.67    10.67    10.67    10.67
   BUILDHGT STCK1       10.67    10.67    10.67    10.67    10.67    10.67
   BUILDHGT STCK1       10.67    10.67    10.67    10.67    10.67    10.67
   BUILDHGT STCK1       10.67    10.67    10.67    10.67    10.67    10.67

   BUILDWID STCK1      233.32   240.23   243.13   238.65   226.91   208.28
   BUILDWID STCK1      183.32   163.38   146.74   125.65   158.32   192.21
   BUILDWID STCK1      220.26   241.61   255.63   261.87   260.16   250.55
   BUILDWID STCK1      233.32   240.23   243.13   238.65   226.91   208.28
   BUILDWID STCK1      183.32   163.38   146.74   125.65   158.32   192.21
   BUILDWID STCK1      220.26   241.61   255.63   261.87   260.16   250.55

   BUILDLEN STCK1      125.65   158.32   192.21   220.26   241.61   255.63
   BUILDLEN STCK1      261.87   260.16   250.55   233.32   240.23   243.13
   BUILDLEN STCK1      238.65   226.91   208.28   183.32   163.38   146.74
   BUILDLEN STCK1      125.65   158.32   192.21   220.26   241.61   255.63
   BUILDLEN STCK1      261.87   260.16   250.55   233.32   240.23   243.13
   BUILDLEN STCK1      238.65   226.91   208.28   183.32   163.38   146.74

   XBADJ    STCK1      -39.81   -43.74   -50.61   -55.95   -59.59   -61.41
   XBADJ    STCK1      -61.37   -59.47   -55.76   -50.35   -54.76   -59.14
   XBADJ    STCK1      -61.72   -62.43   -61.24   -58.19   -63.96   -76.06
   XBADJ    STCK1      -85.84  -114.58  -141.60  -164.31  -182.03  -194.22
   XBADJ    STCK1     -200.50  -200.70  -194.79  -182.97  -185.47  -183.99
   XBADJ    STCK1     -176.92  -164.48  -147.04  -125.13   -99.42   -70.69

   YBADJ    STCK1      -66.31   -65.35   -62.43   -57.60   -51.02   -42.90
   YBADJ    STCK1      -33.47   -17.73     2.68    23.02    35.42    45.49
   YBADJ    STCK1       54.18    61.22    66.40    69.56    70.61    69.52
   YBADJ    STCK1       66.31    65.35    62.43    57.60    51.02    42.90
   YBADJ    STCK1       33.47    17.73    -2.68   -23.02   -35.42   -45.49
   YBADJ    STCK1      -54.18   -61.22   -66.40   -69.56   -70.61   -69.52

   URBANSRC STCK1
   SRCGROUP ALL
SO FINISHED
**
```

```
**************************************
** AERMOD Receptor Pathway
**************************************
**
**
RE STARTING
   INCLUDED NNP.rou
RE FINISHED
**
**************************************
** AERMOD Meteorology Pathway
**************************************
**
**
ME STARTING
   SURFFILE C:\Meteorology\AERMOD\cela.SFC
   PROFFILE C:\Meteorology\AERMOD\cela.PFL
   SURFDATA 0 2006
   UAIRDATA 3190 2006
   PROFBASE 10 METERS
ME FINISHED
**
**************************************
** AERMOD Output Pathway
**************************************
**
**
OU STARTING
** Auto-Generated Plotfiles
   PLOTFILE PERIOD ALL NNP.AD\PE00GALL.PLT
OU FINISHED

 *********************************
 *** SETUP Finishes Successfully ***
 *********************************

 *** AERMOD - VERSION 09292 ***    *** C:\Users\jkoizumi\Documents\Lakes\ISCARMOD\2010\NamePlate\NNP\NNP.is ***        05/13/10
                                  ***                                                                   ***        12:01:03
                                                                                                                   PAGE   1
 **MODELOPTs:  NonDFAULT CONC                                    FLAT and  ELEV
                                                                 NODRYDPLT NOWETDPLT

                                        ***     MODEL SETUP OPTIONS SUMMARY       ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses URBAN Dispersion Algorithm for the SBL for     1 Source(s),
   for Total of    1 Urban Area(s):
   Urban Population =   9862049.0 ;  Urban Roughness Length =  1.000 m

 **Model Allows User-Specified Options:
         1. Stack-tip Downwash.
         2. Allow FLAT/ELEV Terrain Option by Source,
            with      0 FLAT and      1 ELEV Source(s).
         3. Use Calms Processing Routine.
         4. Use Missing Data Processing Routine.
         5. No Exponential Decay.
         6. Urban Roughness Length of 1.0 Meter Used.

 **Model Assumes No FLAGPOLE Receptor Heights.

 **Model Calculates PERIOD Averages Only

 **This Run Includes:      1 Source(s);       1 Source Group(s); and     655 Receptor(s)

 **The Model Assumes A Pollutant Type of:  OTHER

 **Model Set To Continue RUNning After the Setup Testing.

 **Output Options Selected:
          Model Outputs Tables of PERIOD Averages by Receptor
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =    10.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                  Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =   0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =      3.6 MB of RAM.
```

```
*** AERMOD - VERSION 09292 ***    *** C:\Users\jkoizumi\Documents\Lakes\ISCARMOD\2010\NamePlate\NNP\NNP.is ***        05/13/10
                                  ***                                                                  ***        12:01:03
                                                                                                                  PAGE   2
**MODELOPTs:  NonDFAULT CONC                                  FLAT and  ELEV
                                                              NODRYDPLT NOWETDPLT


                                                *** POINT SOURCE DATA ***

            NUMBER EMISSION RATE                    BASE     STACK   STACK    STACK     STACK    BLDG   URBAN  CAP/  EMIS RATE
   SOURCE    PART.  (GRAMS/SEC)     X        Y      ELEV.    HEIGHT  TEMP.   EXIT VEL. DIAMETER  EXISTS SOURCE HOR   SCALAR
     ID      CATS.                (METERS) (METERS) (METERS) (METERS) (DEG.K)  (M/SEC)  (METERS)                      VARY BY
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

  STCK1         0   0.10000E+01  384922.6 3775005.1   110.8    11.28     0.00     0.03     2.44    YES     YES   NO


*** AERMOD - VERSION 09292 ***    *** C:\Users\jkoizumi\Documents\Lakes\ISCARMOD\2010\NamePlate\NNP\NNP.is ***        05/13/10
                                  ***                                                                  ***        12:01:03
                                                                                                                  PAGE   3
**MODELOPTs:  NonDFAULT CONC                                  FLAT and  ELEV
                                                              NODRYDPLT NOWETDPLT


                                          *** SOURCE IDs DEFINING SOURCE GROUPS ***

GROUP ID                                             SOURCE IDs


 ALL       STCK1   ,


*** AERMOD - VERSION 09292 ***    *** C:\Users\jkoizumi\Documents\Lakes\ISCARMOD\2010\NamePlate\NNP\NNP.is ***        05/13/10
                                  ***                                                                  ***        12:01:03
                                                                                                                  PAGE   4
**MODELOPTs:  NonDFAULT CONC                                  FLAT and  ELEV
                                                              NODRYDPLT NOWETDPLT
                                       *** DIRECTION SPECIFIC BUILDING DIMENSIONS ***


SOURCE ID: STCK1
 IFV    BH      BW      BL     XADJ    YADJ     IFV    BH      BW      BL     XADJ    YADJ
   1   10.7,  233.3,  125.6,  -39.8,  -66.3,      2   10.7,  240.2,  158.3,  -43.7,  -65.3,
   3   10.7,  243.1,  192.2,  -50.6,  -62.4,      4   10.7,  238.7,  220.3,  -55.9,  -57.6,
   5   10.7,  226.9,  241.6,  -59.6,  -51.0,      6   10.7,  208.3,  255.6,  -61.4,  -42.9,
   7   10.7,  183.3,  261.9,  -61.4,  -33.5,      8   10.7,  163.4,  260.2,  -59.5,  -17.7,
   9   10.7,  146.7,  250.6,  -55.8,    2.7,     10   10.7,  125.6,  233.3,  -50.3,   23.0,
  11   10.7,  158.3,  240.2,  -54.8,   35.4,     12   10.7,  192.2,  243.1,  -59.1,   45.5,
  13   10.7,  220.3,  238.7,  -61.7,   54.2,     14   10.7,  241.6,  226.9,  -62.4,   61.2,
  15   10.7,  255.6,  208.3,  -61.2,   66.4,     16   10.7,  261.9,  183.3,  -58.2,   69.6,
  17   10.7,  260.2,  163.4,  -64.0,   70.6,     18   10.7,  250.6,  146.7,  -76.1,   69.5,
  19   10.7,  233.3,  125.6,  -85.8,   66.3,     20   10.7,  240.2,  158.3, -114.6,   65.3,
  21   10.7,  243.1,  192.2, -141.6,   62.4,     22   10.7,  238.7,  220.3, -164.3,   57.6,
  23   10.7,  226.9,  241.6, -182.0,   51.0,     24   10.7,  208.3,  255.6, -194.2,   42.9,
  25   10.7,  183.3,  261.9, -200.5,   33.5,     26   10.7,  163.4,  260.2, -200.7,   17.7,
  27   10.7,  146.7,  250.6, -194.8,   -2.7,     28   10.7,  125.6,  233.3, -183.0,  -23.0,
  29   10.7,  158.3,  240.2, -185.5,  -35.4,     30   10.7,  192.2,  243.1, -184.0,  -45.5,
  31   10.7,  220.3,  238.7, -176.9,  -54.2,     32   10.7,  241.6,  226.9, -164.5,  -61.2,
  33   10.7,  255.6,  208.3, -147.0,  -66.4,     34   10.7,  261.9,  183.3, -125.1,  -69.6,
  35   10.7,  260.2,  163.4,  -99.4,  -70.6,     36   10.7,  250.6,  146.7,  -70.7,  -69.5,
```

**MODELOPTs: NonDFAULT CONC FLAT and ELEV
NODRYDPLT NOWETDPLT

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(	384381.8,	3774397.2,	125.7,	161.0,	0.0);	(384431.8,	3774397.2,	117.3,	161.0,	0.0);
(	384481.8,	3774397.2,	117.3,	161.0,	0.0);	(384531.8,	3774397.2,	117.1,	161.0,	0.0);
(	384581.8,	3774397.2,	116.8,	161.0,	0.0);	(384631.8,	3774397.2,	116.9,	161.0,	0.0);
(	384681.8,	3774397.2,	117.0,	161.0,	0.0);	(384731.8,	3774397.2,	124.2,	124.2,	0.0);
(	384781.8,	3774397.2,	116.6,	126.6,	0.0);	(384831.8,	3774397.2,	115.7,	115.7,	0.0);
(	384881.8,	3774397.2,	114.9,	114.9,	0.0);	(384931.8,	3774397.2,	114.0,	114.0,	0.0);
(	384981.8,	3774397.2,	113.2,	113.2,	0.0);	(385031.8,	3774397.2,	112.4,	112.4,	0.0);
(	385081.8,	3774397.2,	111.7,	111.7,	0.0);	(385131.8,	3774397.2,	110.8,	110.8,	0.0);
(	385181.8,	3774397.2,	110.0,	110.0,	0.0);	(385231.8,	3774397.2,	108.8,	108.8,	0.0);
(	385281.8,	3774397.2,	107.2,	107.2,	0.0);	(385331.8,	3774397.2,	105.5,	105.5,	0.0);
(	385381.8,	3774397.2,	101.9,	110.6,	0.0);	(385431.8,	3774397.2,	102.8,	110.9,	0.0);
(	385481.8,	3774397.2,	109.7,	109.7,	0.0);	(385531.8,	3774397.2,	110.9,	110.9,	0.0);
(	385581.8,	3774397.2,	111.4,	111.4,	0.0);	(384381.8,	3774447.2,	117.5,	161.0,	0.0);
(	384431.8,	3774447.2,	117.9,	161.0,	0.0);	(384481.8,	3774447.2,	117.4,	161.0,	0.0);
(	384531.8,	3774447.2,	116.8,	161.0,	0.0);	(384581.8,	3774447.2,	116.5,	161.0,	0.0);
(	384631.8,	3774447.2,	117.2,	161.0,	0.0);	(384681.8,	3774447.2,	117.1,	161.0,	0.0);
(	384731.8,	3774447.2,	118.6,	125.8,	0.0);	(384781.8,	3774447.2,	116.0,	126.6,	0.0);
(	384831.8,	3774447.2,	115.7,	115.7,	0.0);	(384881.8,	3774447.2,	114.9,	114.9,	0.0);
(	384931.8,	3774447.2,	114.1,	114.1,	0.0);	(384981.8,	3774447.2,	113.3,	113.3,	0.0);
(	385031.8,	3774447.2,	112.4,	112.4,	0.0);	(385081.8,	3774447.2,	111.7,	111.7,	0.0);
(	385131.8,	3774447.2,	110.9,	110.9,	0.0);	(385181.8,	3774447.2,	110.1,	110.1,	0.0);
(	385231.8,	3774447.2,	108.9,	108.9,	0.0);	(385281.8,	3774447.2,	107.8,	107.8,	0.0);
(	385331.8,	3774447.2,	105.2,	105.2,	0.0);	(385381.8,	3774447.2,	102.1,	110.8,	0.0);
(	385431.8,	3774447.2,	104.9,	111.1,	0.0);	(385481.8,	3774447.2,	110.9,	110.9,	0.0);
(	385531.8,	3774447.2,	111.3,	111.3,	0.0);	(385581.8,	3774447.2,	111.6,	111.6,	0.0);
(	384381.8,	3774497.2,	118.1,	161.0,	0.0);	(384431.8,	3774497.2,	117.9,	161.0,	0.0);
(	384481.8,	3774497.2,	116.9,	161.0,	0.0);	(384531.8,	3774497.2,	116.2,	161.0,	0.0);
(	384581.8,	3774497.2,	116.1,	161.0,	0.0);	(384631.8,	3774497.2,	116.8,	161.0,	0.0);
(	384681.8,	3774497.2,	116.9,	161.0,	0.0);	(384731.8,	3774497.2,	115.8,	115.8,	0.0);
(	384781.8,	3774497.2,	115.8,	115.8,	0.0);	(384831.8,	3774497.2,	115.4,	115.4,	0.0);
(	384881.8,	3774497.2,	114.5,	114.5,	0.0);	(384931.8,	3774497.2,	113.7,	113.7,	0.0);
(	384981.8,	3774497.2,	113.1,	113.1,	0.0);	(385031.8,	3774497.2,	112.3,	112.3,	0.0);
(	385081.8,	3774497.2,	111.5,	111.5,	0.0);	(385131.8,	3774497.2,	110.5,	110.5,	0.0);
(	385181.8,	3774497.2,	109.8,	109.8,	0.0);	(385231.8,	3774497.2,	108.9,	108.9,	0.0);
(	385281.8,	3774497.2,	107.8,	107.8,	0.0);	(385331.8,	3774497.2,	104.0,	104.0,	0.0);
(	385381.8,	3774497.2,	102.6,	111.0,	0.0);	(385431.8,	3774497.2,	109.9,	109.9,	0.0);
(	385481.8,	3774497.2,	111.2,	111.2,	0.0);	(385531.8,	3774497.2,	111.6,	111.6,	0.0);
(	385581.8,	3774497.2,	112.1,	112.1,	0.0);	(384381.8,	3774547.2,	117.9,	161.0,	0.0);
(	384431.8,	3774547.2,	117.5,	161.0,	0.0);	(384481.8,	3774547.2,	116.4,	161.0,	0.0);
(	384531.8,	3774547.2,	115.7,	161.0,	0.0);	(384581.8,	3774547.2,	115.5,	161.0,	0.0);
(	384631.8,	3774547.2,	116.0,	161.0,	0.0);	(384681.8,	3774547.2,	116.1,	161.0,	0.0);
(	384731.8,	3774547.2,	114.5,	114.5,	0.0);	(384781.8,	3774547.2,	114.9,	114.9,	0.0);
(	384831.8,	3774547.2,	114.7,	114.7,	0.0);	(384881.8,	3774547.2,	113.8,	113.8,	0.0);
(	384931.8,	3774547.2,	113.2,	113.2,	0.0);	(384981.8,	3774547.2,	112.6,	112.6,	0.0);
(	385031.8,	3774547.2,	112.0,	112.0,	0.0);	(385081.8,	3774547.2,	111.3,	111.3,	0.0);

**MODELOPTs: NonDFAULT CONC FLAT and ELEV
NODRYDPLT NOWETDPLT

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(	385131.8,	3774547.2,	110.7,	110.7,	0.0);	(385181.8,	3774547.2,	109.8,	109.8,	0.0);
(	385231.8,	3774547.2,	108.6,	108.6,	0.0);	(385281.8,	3774547.2,	107.1,	107.6,	0.0);
(	385331.8,	3774547.2,	102.6,	110.9,	0.0);	(385381.8,	3774547.2,	103.5,	111.4,	0.0);
(	385431.8,	3774547.2,	111.0,	111.0,	0.0);	(385481.8,	3774547.2,	111.5,	111.5,	0.0);
(	385531.8,	3774547.2,	112.0,	112.0,	0.0);	(385581.8,	3774547.2,	112.5,	112.5,	0.0);
(	384381.8,	3774597.2,	117.2,	161.0,	0.0);	(384431.8,	3774597.2,	116.7,	161.0,	0.0);
(	384481.8,	3774597.2,	115.8,	161.0,	0.0);	(384531.8,	3774597.2,	115.2,	161.0,	0.0);
(	384581.8,	3774597.2,	114.8,	161.0,	0.0);	(384631.8,	3774597.2,	115.1,	161.0,	0.0);
(	384681.8,	3774597.2,	114.9,	161.0,	0.0);	(384731.8,	3774597.2,	113.3,	113.3,	0.0);
(	384781.8,	3774597.2,	113.5,	113.5,	0.0);	(384831.8,	3774597.2,	113.5,	113.5,	0.0);
(	384881.8,	3774597.2,	112.7,	112.7,	0.0);	(384931.8,	3774597.2,	112.3,	112.3,	0.0);
(	384981.8,	3774597.2,	112.1,	112.1,	0.0);	(385031.8,	3774597.2,	111.5,	111.5,	0.0);
(	385081.8,	3774597.2,	110.9,	110.9,	0.0);	(385131.8,	3774597.2,	110.2,	110.2,	0.0);
(	385181.8,	3774597.2,	109.1,	109.1,	0.0);	(385231.8,	3774597.2,	107.8,	107.8,	0.0);
(	385281.8,	3774597.2,	103.0,	107.8,	0.0);	(385331.8,	3774597.2,	102.6,	111.4,	0.0);
(	385381.8,	3774597.2,	110.2,	110.2,	0.0);	(385431.8,	3774597.2,	111.3,	111.3,	0.0);
(	385481.8,	3774597.2,	111.8,	111.8,	0.0);	(385531.8,	3774597.2,	112.3,	112.3,	0.0);
(	385581.8,	3774597.2,	112.8,	112.8,	0.0);	(384381.8,	3774647.2,	116.2,	161.0,	0.0);
(	384431.8,	3774647.2,	115.9,	161.0,	0.0);	(384481.8,	3774647.2,	115.1,	161.0,	0.0);
(	384531.8,	3774647.2,	114.5,	161.0,	0.0);	(384581.8,	3774647.2,	114.0,	161.0,	0.0);
(	384631.8,	3774647.2,	114.1,	161.0,	0.0);	(384681.8,	3774647.2,	113.8,	113.8,	0.0);
(	384731.8,	3774647.2,	112.1,	112.1,	0.0);	(384781.8,	3774647.2,	112.1,	112.1,	0.0);
(	384831.8,	3774647.2,	112.3,	112.3,	0.0);	(384881.8,	3774647.2,	111.6,	111.6,	0.0);
(	384931.8,	3774647.2,	111.1,	111.1,	0.0);	(384981.8,	3774647.2,	111.1,	111.1,	0.0);
(	385031.8,	3774647.2,	110.8,	110.8,	0.0);	(385081.8,	3774647.2,	110.0,	110.0,	0.0);
(	385131.8,	3774647.2,	109.2,	109.2,	0.0);	(385181.8,	3774647.2,	108.0,	108.0,	0.0);
(	385231.8,	3774647.2,	104.0,	107.8,	0.0);	(385281.8,	3774647.2,	102.9,	111.1,	0.0);
(	385331.8,	3774647.2,	107.6,	111.1,	0.0);	(385381.8,	3774647.2,	111.2,	111.2,	0.0);
(	385431.8,	3774647.2,	111.9,	111.9,	0.0);	(385481.8,	3774647.2,	112.5,	112.5,	0.0);
(	385531.8,	3774647.2,	112.8,	112.8,	0.0);	(385581.8,	3774647.2,	113.2,	113.2,	0.0);
(	384381.8,	3774697.2,	115.1,	161.0,	0.0);	(384431.8,	3774697.2,	114.7,	161.0,	0.0);
(	384481.8,	3774697.2,	114.1,	161.0,	0.0);	(384531.8,	3774697.2,	113.5,	161.0,	0.0);
(	384581.8,	3774697.2,	113.1,	161.0,	0.0);	(384631.8,	3774697.2,	113.2,	113.2,	0.0);
(	384681.8,	3774697.2,	112.9,	112.9,	0.0);	(384731.8,	3774697.2,	111.3,	111.3,	0.0);
(	384781.8,	3774697.2,	111.1,	111.1,	0.0);	(384831.8,	3774697.2,	110.9,	110.9,	0.0);
(	384881.8,	3774697.2,	110.8,	110.8,	0.0);	(384931.8,	3774697.2,	110.2,	110.2,	0.0);
(	384981.8,	3774697.2,	110.3,	110.3,	0.0);	(385031.8,	3774697.2,	110.6,	110.6,	0.0);
(	385081.8,	3774697.2,	109.1,	109.1,	0.0);	(385131.8,	3774697.2,	107.8,	107.8,	0.0);
(	385181.8,	3774697.2,	103.7,	108.2,	0.0);	(385231.8,	3774697.2,	102.9,	111.1,	0.0);
(	385281.8,	3774697.2,	106.0,	111.1,	0.0);	(385331.8,	3774697.2,	111.0,	111.0,	0.0);
(	385381.8,	3774697.2,	111.8,	111.8,	0.0);	(385431.8,	3774697.2,	112.5,	112.5,	0.0);
(	385481.8,	3774697.2,	113.3,	113.3,	0.0);	(385531.8,	3774697.2,	113.4,	113.4,	0.0);
(	385581.8,	3774697.2,	113.8,	113.8,	0.0);	(384381.8,	3774747.2,	113.6,	161.0,	0.0);
(	384431.8,	3774747.2,	113.3,	161.0,	0.0);	(384481.8,	3774747.2,	112.9,	161.0,	0.0);
(	384531.8,	3774747.2,	112.4,	161.0,	0.0);	(384581.8,	3774747.2,	112.1,	112.1,	0.0);

**MODELOPTs: NonDFAULT CONC FLAT and ELEV
NODRYDPLT NOWETDPLT

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(	384631.8,	3774747.2,	112.3,	112.3,	0.0);	(384681.8,	3774747.2,	112.2,	112.2,	0.0);
(	384731.8,	3774747.2,	110.8,	110.8,	0.0);	(384781.8,	3774747.2,	110.5,	110.5,	0.0);
(	384831.8,	3774747.2,	110.1,	110.1,	0.0);	(384881.8,	3774747.2,	109.6,	109.6,	0.0);
(	384931.8,	3774747.2,	109.3,	109.3,	0.0);	(384981.8,	3774747.2,	109.5,	109.5,	0.0);
(	385031.8,	3774747.2,	109.4,	109.4,	0.0);	(385081.8,	3774747.2,	105.9,	109.9,	0.0);
(	385131.8,	3774747.2,	103.6,	103.6,	0.0);	(385181.8,	3774747.2,	103.3,	111.2,	0.0);
(	385231.8,	3774747.2,	107.5,	110.9,	0.0);	(385281.8,	3774747.2,	110.9,	110.9,	0.0);
(	385331.8,	3774747.2,	111.6,	111.6,	0.0);	(385381.8,	3774747.2,	112.3,	112.3,	0.0);
(	385431.8,	3774747.2,	113.0,	113.0,	0.0);	(385481.8,	3774747.2,	113.8,	113.8,	0.0);
(	385531.8,	3774747.2,	114.3,	114.3,	0.0);	(385581.8,	3774747.2,	114.9,	114.9,	0.0);
(	384381.8,	3774797.2,	112.1,	161.0,	0.0);	(384431.8,	3774797.2,	112.1,	161.0,	0.0);
(	384481.8,	3774797.2,	111.8,	161.0,	0.0);	(384531.8,	3774797.2,	111.1,	111.1,	0.0);
(	384581.8,	3774797.2,	111.0,	111.0,	0.0);	(384631.8,	3774797.2,	111.4,	111.4,	0.0);
(	384681.8,	3774797.2,	111.1,	111.1,	0.0);	(384731.8,	3774797.2,	110.6,	110.6,	0.0);
(	384781.8,	3774797.2,	109.9,	109.9,	0.0);	(384831.8,	3774797.2,	109.0,	109.0,	0.0);
(	384881.8,	3774797.2,	108.4,	108.4,	0.0);	(384931.8,	3774797.2,	107.7,	107.7,	0.0);
(	384981.8,	3774797.2,	107.0,	108.0,	0.0);	(385031.8,	3774797.2,	104.0,	110.7,	0.0);
(	385081.8,	3774797.2,	103.5,	110.4,	0.0);	(385131.8,	3774797.2,	103.9,	111.9,	0.0);
(	385181.8,	3774797.2,	107.3,	111.2,	0.0);	(385231.8,	3774797.2,	111.1,	111.1,	0.0);
(	385281.8,	3774797.2,	111.6,	111.6,	0.0);	(385331.8,	3774797.2,	112.2,	112.2,	0.0);
(	385381.8,	3774797.2,	112.9,	112.9,	0.0);	(385431.8,	3774797.2,	113.6,	113.6,	0.0);
(	385481.8,	3774797.2,	114.3,	114.3,	0.0);	(385531.8,	3774797.2,	115.0,	115.0,	0.0);
(	385581.8,	3774797.2,	115.9,	115.9,	0.0);	(384381.8,	3774847.2,	108.4,	161.0,	0.0);
(	384431.8,	3774847.2,	108.6,	110.8,	0.0);	(384481.8,	3774847.2,	108.6,	110.7,	0.0);
(	384531.8,	3774847.2,	108.2,	108.2,	0.0);	(384581.8,	3774847.2,	108.2,	110.4,	0.0);
(	384631.8,	3774847.2,	108.5,	108.5,	0.0);	(384681.8,	3774847.2,	108.7,	108.7,	0.0);
(	384731.8,	3774847.2,	107.8,	110.5,	0.0);	(384781.8,	3774847.2,	106.2,	109.9,	0.0);
(	384831.8,	3774847.2,	105.4,	108.1,	0.0);	(384881.8,	3774847.2,	104.7,	107.6,	0.0);
(	384931.8,	3774847.2,	103.9,	103.9,	0.0);	(384981.8,	3774847.2,	103.7,	111.1,	0.0);
(	385031.8,	3774847.2,	103.6,	111.6,	0.0);	(385081.8,	3774847.2,	106.6,	111.4,	0.0);
(	385131.8,	3774847.2,	110.1,	110.9,	0.0);	(385181.8,	3774847.2,	111.7,	111.7,	0.0);
(	385231.8,	3774847.2,	112.3,	112.3,	0.0);	(385281.8,	3774847.2,	112.4,	112.4,	0.0);
(	385331.8,	3774847.2,	112.7,	112.7,	0.0);	(385381.8,	3774847.2,	113.4,	113.4,	0.0);
(	385431.8,	3774847.2,	114.1,	114.1,	0.0);	(385481.8,	3774847.2,	114.8,	114.8,	0.0);
(	385531.8,	3774847.2,	115.6,	115.6,	0.0);	(385581.8,	3774847.2,	116.5,	116.5,	0.0);
(	384381.8,	3774897.2,	107.0,	109.9,	0.0);	(384431.8,	3774897.2,	107.0,	107.0,	0.0);
(	384481.8,	3774897.2,	106.7,	106.7,	0.0);	(384531.8,	3774897.2,	106.4,	106.4,	0.0);
(	384581.8,	3774897.2,	105.8,	105.8,	0.0);	(384631.8,	3774897.2,	105.0,	105.0,	0.0);
(	384681.8,	3774897.2,	104.6,	104.6,	0.0);	(384731.8,	3774897.2,	103.8,	117.2,	0.0);
(	384781.8,	3774897.2,	104.0,	117.2,	0.0);	(384831.8,	3774897.2,	104.2,	117.2,	0.0);
(	384881.8,	3774897.2,	103.8,	110.8,	0.0);	(384931.8,	3774897.2,	105.7,	110.8,	0.0);
(	384981.8,	3774897.2,	106.7,	111.1,	0.0);	(385031.8,	3774897.2,	110.8,	110.8,	0.0);
(	385081.8,	3774897.2,	111.4,	111.4,	0.0);	(385131.8,	3774897.2,	112.2,	112.2,	0.0);
(	385181.8,	3774897.2,	113.2,	113.2,	0.0);	(385231.8,	3774897.2,	113.5,	113.5,	0.0);
(	385281.8,	3774897.2,	113.0,	113.0,	0.0);	(385331.8,	3774897.2,	113.1,	113.1,	0.0);

**MODELOPTs: NonDFAULT CONC FLAT and ELEV
NODRYDPLT NOWETDPLT

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(	385381.8,	3774897.2,	113.9,	113.9,	0.0);	(385431.8,	3774897.2,	114.6,	114.6,	0.0);
(	385481.8,	3774897.2,	115.4,	115.4,	0.0);	(385531.8,	3774897.2,	116.2,	116.2,	0.0);
(	385581.8,	3774897.2,	117.4,	117.4,	0.0);	(384381.8,	3774947.2,	110.8,	110.8,	0.0);
(	384431.8,	3774947.2,	110.7,	110.7,	0.0);	(384481.8,	3774947.2,	110.1,	110.1,	0.0);
(	384531.8,	3774947.2,	109.7,	109.7,	0.0);	(384581.8,	3774947.2,	109.1,	109.1,	0.0);
(	384631.8,	3774947.2,	108.0,	108.0,	0.0);	(384681.8,	3774947.2,	106.9,	111.1,	0.0);
(	384731.8,	3774947.2,	105.5,	118.4,	0.0);	(384781.8,	3774947.2,	105.6,	119.4,	0.0);
(	384831.8,	3774947.2,	107.9,	118.4,	0.0);	(384881.8,	3774947.2,	110.3,	110.3,	0.0);
(	384931.8,	3774947.2,	110.8,	110.8,	0.0);	(385131.8,	3774947.2,	113.2,	113.2,	0.0);
(	385181.8,	3774947.2,	113.8,	113.8,	0.0);	(385231.8,	3774947.2,	114.0,	114.0,	0.0);
(	385281.8,	3774947.2,	113.7,	113.7,	0.0);	(385331.8,	3774947.2,	113.6,	113.6,	0.0);
(	385381.8,	3774947.2,	114.3,	114.3,	0.0);	(385431.8,	3774947.2,	115.1,	115.1,	0.0);
(	385481.8,	3774947.2,	115.8,	115.8,	0.0);	(385531.8,	3774947.2,	116.9,	116.9,	0.0);
(	385581.8,	3774947.2,	118.4,	118.4,	0.0);	(384381.8,	3774997.2,	111.6,	111.6,	0.0);
(	384431.8,	3774997.2,	111.6,	111.6,	0.0);	(384481.8,	3774997.2,	111.4,	111.4,	0.0);
(	384531.8,	3774997.2,	111.2,	111.2,	0.0);	(384581.8,	3774997.2,	111.0,	111.0,	0.0);
(	384631.8,	3774997.2,	111.2,	111.2,	0.0);	(384681.8,	3774997.2,	111.1,	111.1,	0.0);
(	384731.8,	3774997.2,	111.5,	117.1,	0.0);	(384781.8,	3774997.2,	113.4,	118.4,	0.0);
(	385181.8,	3774997.2,	114.1,	114.1,	0.0);	(385231.8,	3774997.2,	114.3,	114.3,	0.0);
(	385281.8,	3774997.2,	114.2,	114.2,	0.0);	(385331.8,	3774997.2,	114.3,	114.3,	0.0);
(	385381.8,	3774997.2,	114.9,	114.9,	0.0);	(385431.8,	3774997.2,	115.6,	115.6,	0.0);
(	385481.8,	3774997.2,	116.4,	116.4,	0.0);	(385531.8,	3774997.2,	117.7,	117.7,	0.0);
(	385581.8,	3774997.2,	119.2,	119.2,	0.0);	(384381.8,	3775047.2,	112.2,	112.2,	0.0);
(	384431.8,	3775047.2,	112.1,	112.1,	0.0);	(384481.8,	3775047.2,	112.1,	112.1,	0.0);
(	384531.8,	3775047.2,	112.0,	112.0,	0.0);	(384581.8,	3775047.2,	111.9,	111.9,	0.0);
(	384631.8,	3775047.2,	112.0,	112.0,	0.0);	(384681.8,	3775047.2,	112.3,	112.3,	0.0);
(	384731.8,	3775047.2,	114.6,	114.6,	0.0);	(384781.8,	3775047.2,	117.7,	117.7,	0.0);
(	385181.8,	3775047.2,	114.5,	114.5,	0.0);	(385231.8,	3775047.2,	114.7,	114.7,	0.0);
(	385281.8,	3775047.2,	114.8,	114.8,	0.0);	(385331.8,	3775047.2,	115.1,	115.1,	0.0);
(	385381.8,	3775047.2,	115.5,	115.5,	0.0);	(385431.8,	3775047.2,	116.2,	116.2,	0.0);
(	385481.8,	3775047.2,	117.0,	117.0,	0.0);	(385531.8,	3775047.2,	118.4,	118.4,	0.0);
(	385581.8,	3775047.2,	120.0,	120.0,	0.0);	(384381.8,	3775097.2,	112.7,	112.7,	0.0);
(	384431.8,	3775097.2,	112.8,	112.8,	0.0);	(384481.8,	3775097.2,	112.8,	112.8,	0.0);
(	384531.8,	3775097.2,	112.8,	112.8,	0.0);	(384581.8,	3775097.2,	112.7,	112.7,	0.0);
(	384631.8,	3775097.2,	113.0,	113.0,	0.0);	(384681.8,	3775097.2,	113.4,	113.4,	0.0);
(	384731.8,	3775097.2,	114.1,	114.1,	0.0);	(384781.8,	3775097.2,	116.3,	116.3,	0.0);
(	384831.8,	3775097.2,	120.3,	120.3,	0.0);	(384881.8,	3775097.2,	121.4,	126.1,	0.0);
(	384931.8,	3775097.2,	114.0,	127.0,	0.0);	(385181.8,	3775097.2,	115.1,	115.1,	0.0);
(	385231.8,	3775097.2,	115.6,	115.6,	0.0);	(385281.8,	3775097.2,	115.6,	115.6,	0.0);
(	385331.8,	3775097.2,	115.6,	115.6,	0.0);	(385381.8,	3775097.2,	115.9,	115.9,	0.0);
(	385431.8,	3775097.2,	116.6,	116.6,	0.0);	(385481.8,	3775097.2,	117.6,	117.6,	0.0);
(	385531.8,	3775097.2,	118.8,	118.8,	0.0);	(385581.8,	3775097.2,	120.4,	120.4,	0.0);
(	384381.8,	3775147.2,	113.4,	113.4,	0.0);	(384431.8,	3775147.2,	113.6,	113.6,	0.0);
(	384481.8,	3775147.2,	113.7,	113.7,	0.0);	(384531.8,	3775147.2,	113.8,	113.8,	0.0);
(	384581.8,	3775147.2,	113.8,	113.8,	0.0);	(384631.8,	3775147.2,	114.1,	114.1,	0.0);

**MODELOPTs: NonDFAULT CONC FLAT and ELEV
NODRYDPLT NOWETDPLT

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(	384681.8,	3775147.2,	114.2,	114.2,	0.0);	(384731.8,	3775147.2,	114.4,	114.4,	0.0);
(	384781.8,	3775147.2,	115.2,	126.1,	0.0);	(384831.8,	3775147.2,	116.8,	127.0,	0.0);
(	384881.8,	3775147.2,	125.3,	125.3,	0.0);	(384931.8,	3775147.2,	124.5,	126.6,	0.0);
(	384981.8,	3775147.2,	116.4,	127.0,	0.0);	(385031.8,	3775147.2,	114.0,	127.0,	0.0);
(	385131.8,	3775147.2,	115.4,	115.4,	0.0);	(385181.8,	3775147.2,	116.0,	116.0,	0.0);
(	385231.8,	3775147.2,	116.5,	116.5,	0.0);	(385281.8,	3775147.2,	116.1,	116.1,	0.0);
(	385331.8,	3775147.2,	116.1,	116.1,	0.0);	(385381.8,	3775147.2,	116.4,	116.4,	0.0);
(	385431.8,	3775147.2,	116.5,	116.5,	0.0);	(385481.8,	3775147.2,	117.1,	117.1,	0.0);
(	385531.8,	3775147.2,	118.5,	118.5,	0.0);	(385581.8,	3775147.2,	120.1,	120.1,	0.0);
(	384381.8,	3775197.2,	114.0,	114.0,	0.0);	(384431.8,	3775197.2,	114.4,	114.4,	0.0);
(	384481.8,	3775197.2,	114.6,	114.6,	0.0);	(384531.8,	3775197.2,	114.8,	114.8,	0.0);
(	384581.8,	3775197.2,	115.1,	115.1,	0.0);	(384631.8,	3775197.2,	115.2,	115.2,	0.0);
(	384681.8,	3775197.2,	115.0,	115.0,	0.0);	(384731.8,	3775197.2,	114.9,	114.9,	0.0);
(	384781.8,	3775197.2,	115.2,	115.2,	0.0);	(384831.8,	3775197.2,	115.6,	127.0,	0.0);
(	384881.8,	3775197.2,	116.0,	127.0,	0.0);	(384931.8,	3775197.2,	124.0,	124.6,	0.0);
(	384981.8,	3775197.2,	126.1,	126.1,	0.0);	(385031.8,	3775197.2,	115.9,	126.3,	0.0);
(	385081.8,	3775197.2,	115.3,	126.3,	0.0);	(385131.8,	3775197.2,	116.1,	116.1,	0.0);
(	385181.8,	3775197.2,	117.3,	117.3,	0.0);	(385231.8,	3775197.2,	117.6,	117.6,	0.0);
(	385281.8,	3775197.2,	116.3,	116.3,	0.0);	(385331.8,	3775197.2,	116.5,	116.5,	0.0);
(	385381.8,	3775197.2,	116.9,	116.9,	0.0);	(385431.8,	3775197.2,	116.9,	116.9,	0.0);
(	385481.8,	3775197.2,	116.5,	116.5,	0.0);	(385531.8,	3775197.2,	117.8,	117.8,	0.0);
(	385581.8,	3775197.2,	119.6,	119.6,	0.0);	(384381.8,	3775247.2,	114.5,	114.5,	0.0);
(	384431.8,	3775247.2,	114.9,	114.9,	0.0);	(384481.8,	3775247.2,	115.3,	115.3,	0.0);
(	384531.8,	3775247.2,	115.6,	115.6,	0.0);	(384581.8,	3775247.2,	115.9,	115.9,	0.0);
(	384631.8,	3775247.2,	116.2,	116.2,	0.0);	(384681.8,	3775247.2,	115.9,	115.9,	0.0);
(	384731.8,	3775247.2,	115.6,	115.6,	0.0);	(384781.8,	3775247.2,	115.7,	115.7,	0.0);
(	384831.8,	3775247.2,	115.9,	127.0,	0.0);	(384881.8,	3775247.2,	116.0,	127.0,	0.0);
(	384931.8,	3775247.2,	117.2,	127.0,	0.0);	(384981.8,	3775247.2,	118.7,	126.3,	0.0);
(	385031.8,	3775247.2,	116.3,	126.3,	0.0);	(385081.8,	3775247.2,	116.0,	122.8,	0.0);
(	385131.8,	3775247.2,	119.0,	120.0,	0.0);	(385181.8,	3775247.2,	119.6,	119.6,	0.0);
(	385231.8,	3775247.2,	118.7,	118.7,	0.0);	(385281.8,	3775247.2,	116.6,	116.6,	0.0);
(	385331.8,	3775247.2,	116.8,	116.8,	0.0);	(385381.8,	3775247.2,	117.6,	117.6,	0.0);
(	385431.8,	3775247.2,	117.4,	117.4,	0.0);	(385481.8,	3775247.2,	116.6,	116.6,	0.0);
(	385531.8,	3775247.2,	116.8,	116.8,	0.0);	(385581.8,	3775247.2,	119.4,	119.4,	0.0);
(	384381.8,	3775297.2,	115.0,	115.0,	0.0);	(384431.8,	3775297.2,	115.3,	115.3,	0.0);
(	384481.8,	3775297.2,	115.8,	115.8,	0.0);	(384531.8,	3775297.2,	116.1,	116.1,	0.0);
(	384581.8,	3775297.2,	116.5,	116.5,	0.0);	(384631.8,	3775297.2,	116.8,	116.8,	0.0);
(	384681.8,	3775297.2,	116.8,	116.8,	0.0);	(384731.8,	3775297.2,	116.4,	116.4,	0.0);
(	384781.8,	3775297.2,	116.1,	116.1,	0.0);	(384831.8,	3775297.2,	116.4,	116.4,	0.0);
(	384881.8,	3775297.2,	116.5,	116.5,	0.0);	(384931.8,	3775297.2,	116.7,	116.7,	0.0);
(	384981.8,	3775297.2,	117.0,	125.0,	0.0);	(385031.8,	3775297.2,	117.5,	117.5,	0.0);
(	385081.8,	3775297.2,	119.8,	122.6,	0.0);	(385131.8,	3775297.2,	122.6,	122.6,	0.0);
(	385181.8,	3775297.2,	122.0,	122.0,	0.0);	(385231.8,	3775297.2,	120.2,	120.2,	0.0);
(	385281.8,	3775297.2,	118.0,	118.0,	0.0);	(385331.8,	3775297.2,	117.5,	117.5,	0.0);
(	385381.8,	3775297.2,	118.0,	118.0,	0.0);	(385431.8,	3775297.2,	117.9,	117.9,	0.0);

**MODELOPTs: NonDFAULT CONC FLAT and ELEV
NODRYDPLT NOWETDPLT

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(	385481.8,	3775297.2,	117.0,	117.0,	0.0);	(385531.8,	3775297.2,	116.9,	116.9,	0.0);
(	385581.8,	3775297.2,	119.6,	119.6,	0.0);	(384381.8,	3775347.2,	115.4,	115.4,	0.0);
(	384431.8,	3775347.2,	115.8,	115.8,	0.0);	(384481.8,	3775347.2,	116.2,	116.2,	0.0);
(	384531.8,	3775347.2,	116.6,	116.6,	0.0);	(384581.8,	3775347.2,	117.0,	117.0,	0.0);
(	384631.8,	3775347.2,	117.3,	117.3,	0.0);	(384681.8,	3775347.2,	117.4,	117.4,	0.0);
(	384731.8,	3775347.2,	117.0,	117.0,	0.0);	(384781.8,	3775347.2,	116.6,	116.6,	0.0);
(	384831.8,	3775347.2,	116.8,	116.8,	0.0);	(384881.8,	3775347.2,	116.8,	116.8,	0.0);
(	384931.8,	3775347.2,	116.6,	116.6,	0.0);	(384981.8,	3775347.2,	117.5,	117.5,	0.0);
(	385031.8,	3775347.2,	118.5,	118.5,	0.0);	(385081.8,	3775347.2,	121.3,	121.3,	0.0);
(	385131.8,	3775347.2,	122.6,	122.6,	0.0);	(385181.8,	3775347.2,	122.6,	122.6,	0.0);
(	385231.8,	3775347.2,	121.9,	121.9,	0.0);	(385281.8,	3775347.2,	120.5,	120.5,	0.0);
(	385331.8,	3775347.2,	118.9,	118.9,	0.0);	(385381.8,	3775347.2,	118.4,	118.4,	0.0);
(	385431.8,	3775347.2,	118.1,	118.1,	0.0);	(385481.8,	3775347.2,	117.8,	117.8,	0.0);
(	385531.8,	3775347.2,	117.9,	117.9,	0.0);	(385581.8,	3775347.2,	119.5,	119.5,	0.0);
(	384381.8,	3775397.2,	115.9,	115.9,	0.0);	(384431.8,	3775397.2,	116.2,	116.2,	0.0);
(	384481.8,	3775397.2,	116.7,	116.7,	0.0);	(384531.8,	3775397.2,	117.1,	117.1,	0.0);
(	384581.8,	3775397.2,	117.5,	117.5,	0.0);	(384631.8,	3775397.2,	117.7,	117.7,	0.0);
(	384681.8,	3775397.2,	117.8,	117.8,	0.0);	(384731.8,	3775397.2,	117.6,	117.6,	0.0);
(	384781.8,	3775397.2,	117.4,	117.4,	0.0);	(384831.8,	3775397.2,	117.4,	117.4,	0.0);
(	384881.8,	3775397.2,	117.3,	117.3,	0.0);	(384931.8,	3775397.2,	117.4,	117.4,	0.0);
(	384981.8,	3775397.2,	117.7,	117.7,	0.0);	(385031.8,	3775397.2,	118.5,	118.5,	0.0);
(	385081.8,	3775397.2,	119.7,	119.7,	0.0);	(385131.8,	3775397.2,	121.6,	121.6,	0.0);
(	385181.8,	3775397.2,	122.5,	122.5,	0.0);	(385231.8,	3775397.2,	122.6,	122.6,	0.0);
(	385281.8,	3775397.2,	120.6,	120.6,	0.0);	(385331.8,	3775397.2,	119.5,	119.5,	0.0);
(	385381.8,	3775397.2,	119.5,	119.5,	0.0);	(385431.8,	3775397.2,	119.5,	119.5,	0.0);
(	385481.8,	3775397.2,	119.6,	119.6,	0.0);	(385531.8,	3775397.2,	119.8,	119.8,	0.0);
(	385581.8,	3775397.2,	120.6,	120.6,	0.0);	(384381.8,	3775447.2,	116.5,	116.5,	0.0);
(	384431.8,	3775447.2,	116.8,	116.8,	0.0);	(384481.8,	3775447.2,	117.2,	117.2,	0.0);
(	384531.8,	3775447.2,	117.8,	117.8,	0.0);	(384581.8,	3775447.2,	118.0,	118.0,	0.0);
(	384631.8,	3775447.2,	118.3,	118.3,	0.0);	(384681.8,	3775447.2,	118.3,	118.3,	0.0);
(	384731.8,	3775447.2,	118.4,	118.4,	0.0);	(384781.8,	3775447.2,	118.3,	118.3,	0.0);
(	384831.8,	3775447.2,	118.1,	118.1,	0.0);	(384881.8,	3775447.2,	118.0,	118.0,	0.0);
(	384931.8,	3775447.2,	118.1,	118.1,	0.0);	(384981.8,	3775447.2,	118.1,	118.1,	0.0);
(	385031.8,	3775447.2,	118.5,	118.5,	0.0);	(385081.8,	3775447.2,	119.0,	119.0,	0.0);
(	385131.8,	3775447.2,	119.8,	119.8,	0.0);	(385181.8,	3775447.2,	120.7,	120.7,	0.0);
(	385231.8,	3775447.2,	121.0,	121.0,	0.0);	(385281.8,	3775447.2,	120.2,	120.2,	0.0);
(	385331.8,	3775447.2,	120.2,	120.2,	0.0);	(385381.8,	3775447.2,	121.1,	121.1,	0.0);
(	385431.8,	3775447.2,	121.4,	121.4,	0.0);	(385481.8,	3775447.2,	120.9,	120.9,	0.0);
(	385531.8,	3775447.2,	121.0,	121.0,	0.0);	(385581.8,	3775447.2,	121.6,	121.6,	0.0);
(	384381.8,	3775497.2,	117.2,	117.2,	0.0);	(384431.8,	3775497.2,	117.5,	117.5,	0.0);
(	384481.8,	3775497.2,	117.9,	117.9,	0.0);	(384531.8,	3775497.2,	118.3,	118.3,	0.0);
(	384581.8,	3775497.2,	118.5,	118.5,	0.0);	(384631.8,	3775497.2,	118.7,	118.7,	0.0);
(	384681.8,	3775497.2,	119.1,	119.1,	0.0);	(384731.8,	3775497.2,	119.0,	119.0,	0.0);
(	384781.8,	3775497.2,	119.1,	119.1,	0.0);	(384831.8,	3775497.2,	119.0,	119.0,	0.0);
(	384881.8,	3775497.2,	118.7,	118.7,	0.0);	(384931.8,	3775497.2,	118.6,	118.6,	0.0);

**MODELOPTs: NonDFAULT CONC FLAT and ELEV
NODRYDPLT NOWETDPLT

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(	384981.8,	3775497.2,	118.7,	118.7,	0.0);	(385031.8,	3775497.2,	118.8,	118.8,	0.0);
(	385081.8,	3775497.2,	119.0,	119.0,	0.0);	(385131.8,	3775497.2,	119.4,	119.4,	0.0);
(	385181.8,	3775497.2,	119.8,	119.8,	0.0);	(385231.8,	3775497.2,	120.0,	120.0,	0.0);
(	385281.8,	3775497.2,	120.1,	120.1,	0.0);	(385331.8,	3775497.2,	120.6,	120.6,	0.0);
(	385381.8,	3775497.2,	122.0,	122.0,	0.0);	(385431.8,	3775497.2,	122.5,	122.5,	0.0);
(	385481.8,	3775497.2,	121.9,	121.9,	0.0);	(385531.8,	3775497.2,	121.5,	121.5,	0.0);
(	385581.8,	3775497.2,	121.8,	121.8,	0.0);	(384381.8,	3775547.2,	118.4,	118.4,	0.0);
(	384431.8,	3775547.2,	118.5,	118.5,	0.0);	(384481.8,	3775547.2,	118.8,	118.8,	0.0);
(	384531.8,	3775547.2,	118.9,	118.9,	0.0);	(384581.8,	3775547.2,	119.2,	119.2,	0.0);
(	384631.8,	3775547.2,	119.4,	119.4,	0.0);	(384681.8,	3775547.2,	119.7,	119.7,	0.0);
(	384731.8,	3775547.2,	119.9,	119.9,	0.0);	(384781.8,	3775547.2,	119.9,	119.9,	0.0);
(	384831.8,	3775547.2,	119.9,	119.9,	0.0);	(384881.8,	3775547.2,	119.6,	119.6,	0.0);
(	384931.8,	3775547.2,	119.4,	119.4,	0.0);	(384981.8,	3775547.2,	119.3,	119.3,	0.0);
(	385031.8,	3775547.2,	119.4,	119.4,	0.0);	(385081.8,	3775547.2,	119.3,	119.3,	0.0);
(	385131.8,	3775547.2,	119.4,	119.4,	0.0);	(385181.8,	3775547.2,	119.5,	119.5,	0.0);
(	385231.8,	3775547.2,	119.8,	119.8,	0.0);	(385281.8,	3775547.2,	120.1,	120.1,	0.0);
(	385331.8,	3775547.2,	120.7,	120.7,	0.0);	(385381.8,	3775547.2,	122.0,	122.0,	0.0);
(	385431.8,	3775547.2,	122.7,	122.7,	0.0);	(385481.8,	3775547.2,	122.6,	122.6,	0.0);
(	385531.8,	3775547.2,	122.4,	122.4,	0.0);	(385581.8,	3775547.2,	122.0,	122.0,	0.0);
(	384381.8,	3775597.2,	119.4,	119.4,	0.0);	(384431.8,	3775597.2,	119.5,	119.5,	0.0);
(	384481.8,	3775597.2,	119.7,	119.7,	0.0);	(384531.8,	3775597.2,	119.8,	119.8,	0.0);
(	384581.8,	3775597.2,	120.0,	120.0,	0.0);	(384631.8,	3775597.2,	120.2,	120.2,	0.0);
(	384681.8,	3775597.2,	120.4,	120.4,	0.0);	(384731.8,	3775597.2,	120.6,	120.6,	0.0);
(	384781.8,	3775597.2,	120.7,	120.7,	0.0);	(384831.8,	3775597.2,	120.8,	120.8,	0.0);
(	384881.8,	3775597.2,	120.6,	120.6,	0.0);	(384931.8,	3775597.2,	120.1,	120.1,	0.0);
(	384981.8,	3775597.2,	120.1,	120.1,	0.0);	(385031.8,	3775597.2,	120.0,	120.0,	0.0);
(	385081.8,	3775597.2,	119.8,	119.8,	0.0);	(385131.8,	3775597.2,	119.6,	119.6,	0.0);
(	385181.8,	3775597.2,	119.7,	119.7,	0.0);	(385231.8,	3775597.2,	119.9,	119.9,	0.0);
(	385281.8,	3775597.2,	120.2,	120.2,	0.0);	(385331.8,	3775597.2,	120.7,	120.7,	0.0);
(	385381.8,	3775597.2,	121.4,	121.4,	0.0);	(385431.8,	3775597.2,	122.5,	122.5,	0.0);
(	385481.8,	3775597.2,	122.6,	122.6,	0.0);	(385531.8,	3775597.2,	122.7,	122.7,	0.0);
(	385581.8,	3775597.2,	122.4,	122.4,	0.0);	(384806.8,	3774976.4,	109.2,	119.4,	0.0);
(	385122.3,	3774915.8,	112.5,	112.5,	0.0);	(385163.4,	3775122.1,	115.4,	115.4,	0.0);
(	385103.5,	3775167.5,	115.2,	115.2,	0.0);	(384825.0,	3775049.2,	117.8,	117.8,	0.0);
(	384825.3,	3774972.8,	109.9,	118.4,	0.0);	(384843.9,	3774969.2,	110.3,	117.2,	0.0);
(	384862.5,	3774965.7,	110.6,	110.6,	0.0);	(384881.0,	3774962.1,	110.5,	110.5,	0.0);
(	384899.6,	3774958.6,	110.6,	110.6,	0.0);	(384918.1,	3774955.0,	110.8,	110.8,	0.0);
(	384936.7,	3774951.4,	110.9,	110.9,	0.0);	(384955.3,	3774947.9,	111.1,	111.1,	0.0);
(	384973.8,	3774944.3,	111.2,	111.2,	0.0);	(384992.4,	3774940.8,	111.4,	111.4,	0.0);
(	385011.0,	3774937.2,	111.5,	111.5,	0.0);	(385029.5,	3774933.6,	111.6,	111.6,	0.0);
(	385048.1,	3774930.1,	111.7,	111.7,	0.0);	(385066.6,	3774926.5,	111.9,	111.9,	0.0);
(	385085.2,	3774923.0,	112.0,	112.0,	0.0);	(385103.8,	3774919.4,	112.2,	112.2,	0.0);
(	385126.0,	3774934.6,	112.9,	112.9,	0.0);	(385129.8,	3774953.3,	113.2,	113.2,	0.0);
(	385133.5,	3774972.1,	113.5,	113.5,	0.0);	(385137.3,	3774990.8,	113.7,	113.7,	0.0);
(	385141.0,	3775009.6,	113.9,	113.9,	0.0);	(385144.7,	3775028.3,	114.1,	114.1,	0.0);

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*** AERMOD - VERSION 09292 ***    *** C:\Users\jkoizumi\Documents\Lakes\ISCARMOD\2010\NamePlate\NNP\NNP.is ***        05/13/10
                                  ***                                                                      ***        12:01:03
                                                                                                                      PAGE  12
**MODELOPTs:  NonDFAULT CONC                                        FLAT and  ELEV
                                                                    NODRYDPLT NOWETDPLT

                                              *** DISCRETE CARTESIAN RECEPTORS ***
                                             (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                             (METERS)

    ( 385148.5, 3775047.1,     114.2,     114.2,       0.0);         ( 385152.2, 3775065.8,     114.4,     114.4,       0.0);
    ( 385156.0, 3775084.6,     114.7,     114.7,       0.0);         ( 385159.7, 3775103.3,     115.0,     115.0,       0.0);
    ( 385148.5, 3775133.4,     115.4,     115.4,       0.0);         ( 385133.5, 3775144.8,     115.4,     115.4,       0.0);
    ( 385118.5, 3775156.2,     115.3,     115.3,       0.0);         ( 385086.1, 3775160.1,     114.7,     126.3,       0.0);
    ( 385068.7, 3775152.8,     114.3,     126.3,       0.0);         ( 385051.3, 3775145.3,     114.0,     126.6,       0.0);
    ( 385033.9, 3775138.0,     113.6,     127.0,       0.0);         ( 385016.5, 3775130.6,     113.2,     127.0,       0.0);
    ( 384999.1, 3775123.2,     112.6,     127.0,       0.0);         ( 384981.7, 3775115.8,     112.1,     127.0,       0.0);
    ( 384964.3, 3775108.4,     112.8,     127.0,       0.0);         ( 384946.9, 3775101.0,     112.9,     127.0,       0.0);
    ( 384929.5, 3775093.6,     113.7,     127.0,       0.0);         ( 384912.0, 3775086.2,     115.7,     127.0,       0.0);
    ( 384894.6, 3775078.8,     116.0,     127.0,       0.0);         ( 384877.2, 3775071.4,     117.5,     126.1,       0.0);
    ( 384859.8, 3775064.0,     116.3,     126.1,       0.0);         ( 384842.4, 3775056.6,     116.8,     126.1,       0.0);
    ( 384820.5, 3775031.0,     116.9,     116.9,       0.0);         ( 384815.9, 3775012.8,     116.3,     116.3,       0.0);
    ( 384811.3, 3774994.6,     113.1,     118.4,       0.0);


*** AERMOD - VERSION 09292 ***    *** C:\Users\jkoizumi\Documents\Lakes\ISCARMOD\2010\NamePlate\NNP\NNP.is ***        05/13/10
                                  ***                                                                      ***        12:01:03
                                                                                                                      PAGE  13
**MODELOPTs:  NonDFAULT CONC                                        FLAT and  ELEV
                                                                    NODRYDPLT NOWETDPLT

                                            *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                                             (1=YES; 0=NO)

           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1

               NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.


                                  *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                                          (METERS/SEC)

                                               1.54,   3.09,   5.14,   8.23,  10.80,
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 *** AERMOD - VERSION 09292 ***     *** C:\Users\jkoizumi\Documents\Lakes\ISCARMOD\2010\NamePlate\NNP\NNP.is ***        05/13/10
                                    ***                                                                  ***        12:01:03
                                                                                                                    PAGE  14

 **MODELOPTs:  NonDFAULT CONC                                    FLAT and  ELEV
                                                                 NODRYDPLT NOWETDPLT

                                     *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

   Surface file:   C:\Meteorology\AERMOD\cela.SFC                                                  Met Version:  06341
   Profile file:   C:\Meteorology\AERMOD\cela.PFL
   Surface format: FREE
   Profile format: FREE
   Surface station no.:        0                  Upper air station no.:     3190
                 Name: UNKNOWN                                   Name: UNKNOWN
                 Year:   2006                                    Year:   2006

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 06 01 01   1 01   -0.9  0.040 -9.000 -9.000 -999.   18.      6.3  0.65   1.00   1.00    0.70  347.   21.3  286.4   17.7
 06 01 01   1 02   -3.0  0.086 -9.000 -9.000 -999.   58.     19.1  0.65   1.00   1.00    1.50   82.   21.3  286.4   17.7
 06 01 01   1 03   -1.3  0.057 -9.000 -9.000 -999.   31.     12.7  0.65   1.00   1.00    1.00   66.   21.3  286.4   17.7
 06 01 01   1 04   -1.9  0.069 -9.000 -9.000 -999.   41.     15.2  0.65   1.00   1.00    1.20   23.   21.3  285.9   17.7
 06 01 01   1 05   -3.5  0.080 -9.000 -9.000 -999.   52.     13.1  0.65   1.00   1.00    1.40   61.   21.3  285.4   17.7
 06 01 01   1 06   -3.0  0.086 -9.000 -9.000 -999.   58.     19.0  0.65   1.00   1.00    1.50   83.   21.3  285.4   17.7
 06 01 01   1 07   -6.1  0.103 -9.000 -9.000 -999.   76.     16.2  0.65   1.00   1.00    1.80   64.   21.3  285.4   17.7
 06 01 01   1 08   -3.3  0.080 -9.000 -9.000 -999.   52.     14.1  0.65   1.00   0.55    1.40   46.   21.3  285.4   17.7
 06 01 01   1 09   26.6  0.304  0.644  0.005  362.  385.    -95.4  0.65   1.00   0.32    2.30   87.   21.3  286.4   17.7
 06 01 01   1 10   21.0  0.227  0.732  0.005  675.  250.    -50.2  0.65   1.00   0.24    1.60   76.   21.3  286.4   17.7
 06 01 01   1 11   35.8  0.197  0.912  0.005  766.  201.    -19.2  0.65   1.00   0.21    1.20   66.   21.3  287.5   17.7
 06 01 01   1 12   14.9  0.281  0.686  0.005  785.  343.   -135.5  0.65   1.00   0.20    2.20   79.   21.3  287.5   17.7
 06 01 01   1 13   26.4  0.376  0.842  0.009  818.  530.   -181.6  0.65   1.00   0.20    3.00   76.   21.3  287.5   17.7
 06 01 01   1 14   39.0  0.385  0.979  0.014  867.  549.   -131.8  0.65   1.00   0.21    3.00   80.   21.3  288.1   17.7
 06 01 01   1 15   11.4  0.277  0.653  0.014  881.  341.   -168.4  0.65   1.00   0.25    2.20   86.   21.3  287.5   17.7
 06 01 01   1 16    0.1  0.343  0.135  0.014  881.  462.  -8888.0  0.65   1.00   0.33    3.00   75.   21.3  287.0   17.7
 06 01 01   1 17  -13.7  0.266 -9.000 -9.000 -999.  319.    125.0  0.65   1.00   0.60    2.90   82.   21.3  286.4   17.7
 06 01 01   1 18  -10.2  0.183 -9.000 -9.000 -999.  183.     54.5  0.65   1.00   1.00    2.50  101.   21.3  286.4   17.7
 06 01 01   1 19  -16.1  0.289 -9.000 -9.000 -999.  358.    135.6  0.65   1.00   1.00    3.10   97.   21.3  285.9   17.7
 06 01 01   1 20  -25.2  0.450 -9.000 -9.000 -999.  693.    326.1  0.65   1.00   1.00    4.30   92.   21.3  284.9   17.7
 06 01 01   1 21  -27.3  0.487 -9.000 -9.000 -999.  781.    381.9  0.65   1.00   1.00    4.60   88.   21.3  284.2   17.7
 06 01 01   1 22  -28.0  0.499 -9.000 -9.000 -999.  812.    402.5  0.65   1.00   1.00    4.70   91.   21.3  284.9   17.7
 06 01 01   1 23  -36.1  0.645 -9.000 -9.000 -999. 1191.    673.0  0.65   1.00   1.00    5.90   82.   21.3  285.4   17.7
 06 01 01   1 24  -35.3  0.633 -9.000 -9.000 -999. 1160.    649.7  0.65   1.00   1.00    5.80   84.   21.3  285.9   17.7


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 06 01 01 01   17.7 0 -999.  -99.00   286.5   99.0  -99.00  -99.00
 06 01 01 01   21.3 1  347.    0.70  -999.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
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*** *** 12:01:03
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**MODELOPTs: NonDFAULT CONC FLAT and ELEV
NODRYDPLT NOWETDPLT

*** THE PERIOD (17520 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STCK1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
384381.85	3774397.16	4.63827	384431.85	3774397.16	4.91148
384481.85	3774397.16	5.63421	384531.85	3774397.16	6.25800
384581.85	3774397.16	6.66998	384631.85	3774397.16	6.76113
384681.85	3774397.16	6.38052	384731.85	3774397.16	5.54712
384781.85	3774397.16	5.27858	384831.85	3774397.16	5.05270
384881.85	3774397.16	4.65578	384931.85	3774397.16	4.39892
384981.85	3774397.16	4.21402	385031.85	3774397.16	4.05384
385081.85	3774397.16	3.90096	385131.85	3774397.16	3.70075
385181.85	3774397.16	3.48939	385231.85	3774397.16	3.26827
385281.85	3774397.16	3.03758	385331.85	3774397.16	2.80326
385381.85	3774397.16	2.54763	385431.85	3774397.16	2.35925
385481.85	3774397.16	2.22116	385531.85	3774397.16	2.04659
385581.85	3774397.16	1.88466	384381.85	3774447.16	4.39435
384431.85	3774447.16	5.29052	384481.85	3774447.16	6.20981
384531.85	3774447.16	7.14675	384581.85	3774447.16	7.91735
384631.85	3774447.16	8.35232	384681.85	3774447.16	8.09747
384731.85	3774447.16	7.22497	384781.85	3774447.16	6.53749
384831.85	3774447.16	6.16144	384881.85	3774447.16	5.56233
384931.85	3774447.16	5.16424	384981.85	3774447.16	4.90481
385031.85	3774447.16	4.69113	385081.85	3774447.16	4.48348
385131.85	3774447.16	4.23091	385181.85	3774447.16	3.97108
385231.85	3774447.16	3.69977	385281.85	3774447.16	3.41783
385331.85	3774447.16	3.11809	385381.85	3774447.16	2.81210
385431.85	3774447.16	2.60849	385481.85	3774447.16	2.41838
385531.85	3774447.16	2.20940	385581.85	3774447.16	2.01801
384381.85	3774497.16	4.45383	384431.85	3774497.16	5.46244
384481.85	3774497.16	6.63354	384531.85	3774497.16	7.92694
384581.85	3774497.16	9.26029	384631.85	3774497.16	10.21061
384681.85	3774497.16	10.29233	384731.85	3774497.16	9.40003
384781.85	3774497.16	8.32840	384831.85	3774497.16	7.62328
384881.85	3774497.16	6.74507	384931.85	3774497.16	6.10563
384981.85	3774497.16	5.71934	385031.85	3774497.16	5.43812
385081.85	3774497.16	5.14913	385131.85	3774497.16	4.84123
385181.85	3774497.16	4.51820	385231.85	3774497.16	4.19166
385281.85	3774497.16	3.83898	385331.85	3774497.16	3.44426
385381.85	3774497.16	3.10735	385431.85	3774497.16	2.89795
385481.85	3774497.16	2.62635	385531.85	3774497.16	2.37766
385581.85	3774497.16	2.15739	384381.85	3774547.16	4.41232
384431.85	3774547.16	5.48143	384481.85	3774547.16	6.85030
384531.85	3774547.16	8.13003	384581.85	3774547.16	10.09453

**MODELOPTs: NonDFAULT CONC FLAT and ELEV
NODRYDPLT NOWETDPLT

*** THE PERIOD (17520 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STCK1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
384631.85	3774547.16	12.28205	384681.85	3774547.16	13.05309
384731.85	3774547.16	12.34067	384781.85	3774547.16	10.78916
384831.85	3774547.16	9.59543	384881.85	3774547.16	8.28070
384931.85	3774547.16	7.25954	384981.85	3774547.16	6.70061
385031.85	3774547.16	6.30018	385081.85	3774547.16	5.91098
385131.85	3774547.16	5.52839	385181.85	3774547.16	5.14545
385231.85	3774547.16	4.72943	385281.85	3774547.16	4.28555
385331.85	3774547.16	3.78994	385381.85	3774547.16	3.43707
385431.85	3774547.16	3.16789	385481.85	3774547.16	2.84145
385531.85	3774547.16	2.55333	385581.85	3774547.16	2.30424
384381.85	3774597.16	4.30730	384431.85	3774597.16	5.36552
384481.85	3774597.16	6.56527	384531.85	3774597.16	8.61403
384581.85	3774597.16	11.22330	384631.85	3774597.16	14.05349
384681.85	3774597.16	16.18525	384731.85	3774597.16	16.49036
384781.85	3774597.16	14.46174	384831.85	3774597.16	12.33490
384881.85	3774597.16	10.37191	384931.85	3774597.16	8.73524
384981.85	3774597.16	7.88892	385031.85	3774597.16	7.31472
385081.85	3774597.16	6.80594	385131.85	3774597.16	6.31555
385181.85	3774597.16	5.83147	385231.85	3774597.16	5.29825
385281.85	3774597.16	4.66291	385331.85	3774597.16	4.17620
385381.85	3774597.16	3.86118	385431.85	3774597.16	3.43749
385481.85	3774597.16	3.06590	385531.85	3774597.16	2.74018
385581.85	3774597.16	2.45989	384381.85	3774647.16	4.20390
384431.85	3774647.16	5.22560	384481.85	3774647.16	6.56994
384531.85	3774647.16	8.70973	384581.85	3774647.16	11.81581
384631.85	3774647.16	15.79368	384681.85	3774647.16	19.76758
384731.85	3774647.16	21.74714	384781.85	3774647.16	19.91461
384831.85	3774647.16	16.37259	384881.85	3774647.16	13.30038
384931.85	3774647.16	10.66625	384981.85	3774647.16	9.38066
385031.85	3774647.16	8.51161	385081.85	3774647.16	7.77986
385131.85	3774647.16	7.16178	385181.85	3774647.16	6.52649
385231.85	3774647.16	5.77977	385281.85	3774647.16	5.14047
385331.85	3774647.16	4.70671	385381.85	3774647.16	4.20521
385431.85	3774647.16	3.71553	385481.85	3774647.16	3.29460
385531.85	3774647.16	2.93563	385581.85	3774647.16	2.62849
384381.85	3774697.16	4.25178	384431.85	3774697.16	5.15844
384481.85	3774697.16	6.49502	384531.85	3774697.16	8.48106
384581.85	3774697.16	11.70512	384631.85	3774697.16	16.50475
384681.85	3774697.16	22.58285	384731.85	3774697.16	27.68341
384781.85	3774697.16	27.68894	384831.85	3774697.16	22.61248

**MODELOPTs: NonDFAULT CONC FLAT and ELEV
NODRYDPLT NOWETDPLT

*** THE PERIOD (17520 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STCK1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
384881.85	3774697.16	17.54186	384931.85	3774697.16	13.22650
384981.85	3774697.16	11.23763	385031.85	3774697.16	9.94107
385081.85	3774697.16	8.90009	385131.85	3774697.16	8.01195
385181.85	3774697.16	7.03884	385231.85	3774697.16	6.28446
385281.85	3774697.16	5.73377	385331.85	3774697.16	5.16378
385381.85	3774697.16	4.54066	385431.85	3774697.16	3.99888
385481.85	3774697.16	3.54190	385531.85	3774697.16	3.15280
385581.85	3774697.16	2.82533	384381.85	3774747.16	4.35456
384431.85	3774747.16	5.20121	384481.85	3774747.16	6.38567
384531.85	3774747.16	8.16903	384581.85	3774747.16	11.05672
384631.85	3774747.16	15.86898	384681.85	3774747.16	23.46075
384731.85	3774747.16	32.70487	384781.85	3774747.16	37.67516
384831.85	3774747.16	32.71726	384881.85	3774747.16	24.13686
384931.85	3774747.16	16.83471	384981.85	3774747.16	13.67431
385031.85	3774747.16	11.60366	385081.85	3774747.16	9.83960
385131.85	3774747.16	8.56647	385181.85	3774747.16	7.62966
385231.85	3774747.16	7.05820	385281.85	3774747.16	6.31150
385331.85	3774747.16	5.54120	385381.85	3774747.16	4.87715
385431.85	3774747.16	4.31169	385481.85	3774747.16	3.83065
385531.85	3774747.16	3.41309	385581.85	3774747.16	3.05775
384381.85	3774797.16	4.49374	384431.85	3774797.16	5.34092
384481.85	3774797.16	6.43840	384531.85	3774797.16	7.97142
384581.85	3774797.16	10.36088	384631.85	3774797.16	14.43086
384681.85	3774797.16	21.95533	384731.85	3774797.16	34.39199
384781.85	3774797.16	47.82396	384831.85	3774797.16	48.63348
384881.85	3774797.16	35.44585	384931.85	3774797.16	22.20082
384981.85	3774797.16	16.74624	385031.85	3774797.16	12.80074
385081.85	3774797.16	10.67486	385131.85	3774797.16	9.29829
385181.85	3774797.16	8.54102	385231.85	3774797.16	7.65890
385281.85	3774797.16	6.74602	385331.85	3774797.16	5.97700
385381.85	3774797.16	5.29798	385431.85	3774797.16	4.70867
385481.85	3774797.16	4.19720	385531.85	3774797.16	3.74537
385581.85	3774797.16	3.15874	384381.85	3774847.16	4.63966
384431.85	3774847.16	5.50273	384481.85	3774847.16	6.57093
384531.85	3774847.16	7.97213	384581.85	3774847.16	9.94282
384631.85	3774847.16	13.11813	384681.85	3774847.16	18.89622
384731.85	3774847.16	30.30060	384781.85	3774847.16	49.44936
384831.85	3774847.16	65.26028	384881.85	3774847.16	54.59292
384931.85	3774847.16	32.44194	384981.85	3774847.16	25.93354
385031.85	3774847.16	21.14391	385081.85	3774847.16	14.33506

**MODELOPTs: NonDFAULT CONC FLAT and ELEV
NODRYDPLT NOWETDPLT

*** THE PERIOD (17520 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STCK1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
385131.85	3774847.16	10.91620	385181.85	3774847.16	9.54180
385231.85	3774847.16	8.35621	385281.85	3774847.16	7.39120
385331.85	3774847.16	6.58155	385381.85	3774847.16	5.89672
385431.85	3774847.16	5.26658	385481.85	3774847.16	4.69714
385531.85	3774847.16	4.17586	385581.85	3774847.16	3.54355
384381.85	3774897.16	4.76143	384431.85	3774897.16	5.67223
384481.85	3774897.16	6.78398	384531.85	3774897.16	8.18783
384581.85	3774897.16	9.96508	384631.85	3774897.16	12.37909
384681.85	3774897.16	16.37023	384731.85	3774897.16	23.98947
384781.85	3774897.16	42.66259	384831.85	3774897.16	79.13664
384881.85	3774897.16	103.38064	384931.85	3774897.16	57.74007
384981.85	3774897.16	29.94076	385031.85	3774897.16	24.49861
385081.85	3774897.16	21.97998	385131.85	3774897.16	14.98653
385181.85	3774897.16	11.36306	385231.85	3774897.16	9.81029
385281.85	3774897.16	8.67728	385331.85	3774897.16	7.72141
385381.85	3774897.16	6.88125	385431.85	3774897.16	6.11313
385481.85	3774897.16	5.38982	385531.85	3774897.16	4.58075
385581.85	3774897.16	4.04412	384381.85	3774947.16	4.77947
384431.85	3774947.16	5.74646	384481.85	3774947.16	6.95110
384531.85	3774947.16	8.52024	384581.85	3774947.16	10.54224
384631.85	3774947.16	13.22280	384681.85	3774947.16	17.06135
384731.85	3774947.16	23.21892	384781.85	3774947.16	37.76747
384831.85	3774947.16	116.34807	384881.85	3774947.16	343.50737
384931.85	3774947.16	171.30043	385131.85	3774947.16	27.27075
385181.85	3774947.16	16.19384	385231.85	3774947.16	13.06515
385281.85	3774947.16	11.14602	385331.85	3774947.16	9.64577
385381.85	3774947.16	8.35336	385431.85	3774947.16	7.20404
385481.85	3774947.16	6.06180	385531.85	3774947.16	5.28282
385581.85	3774947.16	4.60065	384381.85	3774997.16	4.58820
384431.85	3774997.16	5.46976	384481.85	3774997.16	6.60115
384531.85	3774997.16	8.04093	384581.85	3774997.16	9.95397
384631.85	3774997.16	12.60698	384681.85	3774997.16	16.53153
384731.85	3774997.16	23.18003	384781.85	3774997.16	36.21053
385181.85	3774997.16	22.17849	385231.85	3774997.16	16.90286
385281.85	3774997.16	13.99159	385331.85	3774997.16	11.74524
385381.85	3774997.16	9.90663	385431.85	3774997.16	8.34240
385481.85	3774997.16	6.95108	385531.85	3774997.16	5.96429
385581.85	3774997.16	5.16250	384381.85	3775047.16	4.35565
384431.85	3775047.16	5.14627	384481.85	3775047.16	6.12543
384531.85	3775047.16	7.36354	384581.85	3775047.16	8.94245

**MODELOPTs: NonDFAULT CONC FLAT and ELEV
NODRYDPLT NOWETDPLT

*** THE PERIOD (17520 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STCK1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
384631.85	3775047.16	10.99214	384681.85	3775047.16	13.82669
384731.85	3775047.16	17.75218	384781.85	3775047.16	19.57147
385181.85	3775047.16	23.45473	385231.85	3775047.16	18.64949
385281.85	3775047.16	15.41714	385331.85	3775047.16	12.89039
385381.85	3775047.16	10.83783	385431.85	3775047.16	8.94644
385481.85	3775047.16	7.60187	385531.85	3775047.16	6.50011
385581.85	3775047.16	5.59824	384381.85	3775097.16	4.10510
384431.85	3775097.16	4.80520	384481.85	3775097.16	5.67716
384531.85	3775097.16	6.76164	384581.85	3775097.16	8.11982
384631.85	3775097.16	9.80402	384681.85	3775097.16	11.93299
384731.85	3775097.16	14.89361	384781.85	3775097.16	16.86313
384831.85	3775097.16	20.98301	384881.85	3775097.16	55.49800
384931.85	3775097.16	103.53916	385181.85	3775097.16	19.86563
385231.85	3775097.16	16.80367	385281.85	3775097.16	14.44085
385331.85	3775097.16	12.42733	385381.85	3775097.16	10.39695
385431.85	3775097.16	8.93958	385481.85	3775097.16	7.67698
385531.85	3775097.16	6.62113	385581.85	3775097.16	5.75160
384381.85	3775147.16	3.87492	384431.85	3775147.16	4.51446
384481.85	3775147.16	5.30327	384531.85	3775147.16	6.27616
384581.85	3775147.16	7.45655	384631.85	3775147.16	8.88039
384681.85	3775147.16	10.65830	384731.85	3775147.16	13.20681
384781.85	3775147.16	17.27024	384831.85	3775147.16	19.20254
384881.85	3775147.16	23.97148	384931.85	3775147.16	47.70332
384981.85	3775147.16	50.38853	385031.85	3775147.16	32.13127
385131.85	3775147.16	17.93810	385181.85	3775147.16	13.98016
385231.85	3775147.16	12.41564	385281.85	3775147.16	11.30520
385331.85	3775147.16	10.24635	385381.85	3775147.16	9.11304
385431.85	3775147.16	8.12145	385481.85	3775147.16	7.16232
385531.85	3775147.16	6.27521	385581.85	3775147.16	5.56006
384381.85	3775197.16	3.66209	384431.85	3775197.16	4.23325
384481.85	3775197.16	4.92279	384531.85	3775197.16	5.74641
384581.85	3775197.16	6.72010	384631.85	3775197.16	7.89257
384681.85	3775197.16	9.37285	384731.85	3775197.16	11.36782
384781.85	3775197.16	13.92690	384831.85	3775197.16	17.73426
384881.85	3775197.16	24.98629	384931.85	3775197.16	32.58270
384981.85	3775197.16	28.04732	385031.85	3775197.16	22.53907
385081.85	3775197.16	16.77977	385131.85	3775197.16	12.36902
385181.85	3775197.16	10.55952	385231.85	3775197.16	9.52487
385281.85	3775197.16	8.99015	385331.85	3775197.16	8.27964
385381.85	3775197.16	7.64125	385431.85	3775197.16	6.97610

**MODELOPTs: NonDFAULT CONC FLAT and ELEV
NODRYDPLT NOWETDPLT

*** THE PERIOD (17520 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STCK1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
385481.85	3775197.16	6.32348	385531.85	3775197.16	5.66622
385581.85	3775197.16	5.08129	384381.85	3775247.16	3.43030
384431.85	3775247.16	3.91983	384481.85	3775247.16	4.49763
384531.85	3775247.16	5.17892	384581.85	3775247.16	5.02398
384631.85	3775247.16	5.76772	384681.85	3775247.16	6.84838
384731.85	3775247.16	9.55390	384781.85	3775247.16	11.19637
384831.85	3775247.16	12.12216	384881.85	3775247.16	19.29650
384931.85	3775247.16	30.09476	384981.85	3775247.16	28.47538
385031.85	3775247.16	19.57716	385081.85	3775247.16	13.12857
385131.85	3775247.16	9.55249	385181.85	3775247.16	8.22266
385231.85	3775247.16	7.64922	385281.85	3775247.16	7.41118
385331.85	3775247.16	6.84737	385381.85	3775247.16	6.30609
385431.85	3775247.16	5.84962	385481.85	3775247.16	5.43740
385531.85	3775247.16	4.96194	385581.85	3775247.16	4.49451
384381.85	3775297.16	3.18349	384431.85	3775297.16	3.59826
384481.85	3775297.16	4.08153	384531.85	3775297.16	3.86886
384581.85	3775297.16	4.35767	384631.85	3775297.16	4.94392
384681.85	3775297.16	5.70883	384731.85	3775297.16	6.65685
384781.85	3775297.16	7.75917	384831.85	3775297.16	9.85023
384881.85	3775297.16	15.25473	384931.85	3775297.16	23.70564
384981.85	3775297.16	24.94769	385031.85	3775297.16	17.40390
385081.85	3775297.16	10.78137	385131.85	3775297.16	7.54562
385181.85	3775297.16	6.53555	385231.85	3775297.16	6.18527
385281.85	3775297.16	6.08687	385331.85	3775297.16	5.73239
385381.85	3775297.16	5.30006	385431.85	3775297.16	4.97616
385481.85	3775297.16	4.65916	385531.85	3775297.16	4.31865
385581.85	3775297.16	3.92515	384381.85	3775347.16	2.94137
384431.85	3775347.16	3.29252	384481.85	3775347.16	3.07088
384531.85	3775347.16	3.40944	384581.85	3775347.16	3.80830
384631.85	3775347.16	4.27029	384681.85	3775347.16	4.80639
384731.85	3775347.16	5.46825	384781.85	3775347.16	6.40289
384831.85	3775347.16	8.24339	384881.85	3775347.16	12.48670
384931.85	3775347.16	18.75555	384981.85	3775347.16	20.64289
385031.85	3775347.16	15.58896	385081.85	3775347.16	9.75912
385131.85	3775347.16	6.87067	385181.85	3775347.16	5.62814
385231.85	3775347.16	5.10186	385281.85	3775347.16	4.87394
385331.85	3775347.16	4.76245	385381.85	3775347.16	4.51903
385431.85	3775347.16	4.25698	385481.85	3775347.16	4.00472
385531.85	3775347.16	3.73201	385581.85	3775347.16	3.43190
384381.85	3775397.16	2.27855	384431.85	3775397.16	2.50036

**MODELOPTs: NonDFAULT CONC FLAT and ELEV
NODRYDPLT NOWETDPLT

*** THE PERIOD (17520 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STCK1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
384481.85	3775397.16	2.73589	384531.85	3775397.16	3.00790
384581.85	3775397.16	3.31893	384631.85	3775397.16	3.69019
384681.85	3775397.16	4.07748	384731.85	3775397.16	4.55592
384781.85	3775397.16	5.33637	384831.85	3775397.16	6.95326
384881.85	3775397.16	10.30888	384931.85	3775397.16	14.78222
384981.85	3775397.16	17.10777	385031.85	3775397.16	14.06030
385081.85	3775397.16	9.51888	385131.85	3775397.16	6.54718
385181.85	3775397.16	5.09668	385231.85	3775397.16	4.39573
385281.85	3775397.16	4.20880	385331.85	3775397.16	4.04367
385381.85	3775397.16	3.81773	385431.85	3775397.16	3.59935
385481.85	3775397.16	3.39261	385531.85	3775397.16	3.18143
385581.85	3775397.16	2.97121	384381.85	3775447.16	2.06167
384431.85	3775447.16	2.24832	384481.85	3775447.16	2.43898
384531.85	3775447.16	2.64202	384581.85	3775447.16	2.90309
384631.85	3775447.16	3.17336	384681.85	3775447.16	3.47520
384731.85	3775447.16	3.84320	384781.85	3775447.16	4.53374
384831.85	3775447.16	5.96225	384881.85	3775447.16	8.51615
384931.85	3775447.16	11.89802	384981.85	3775447.16	14.07300
385031.85	3775447.16	12.46910	385081.85	3775447.16	9.02611
385131.85	3775447.16	6.41505	385181.85	3775447.16	4.89683
385231.85	3775447.16	4.11204	385281.85	3775447.16	3.75605
385331.85	3775447.16	3.47600	385381.85	3775447.16	3.21337
385431.85	3775447.16	3.03580	385481.85	3775447.16	2.90283
385531.85	3775447.16	2.74666	385581.85	3775447.16	2.57973
384381.85	3775497.16	1.84620	384431.85	3775497.16	2.00063
384481.85	3775497.16	2.16582	384531.85	3775497.16	2.33853
384581.85	3775497.16	2.54149	384631.85	3775497.16	2.74568
384681.85	3775497.16	2.95139	384731.85	3775497.16	3.30903
384781.85	3775497.16	3.92455	384831.85	3775497.16	5.11300
384881.85	3775497.16	7.13849	384931.85	3775497.16	9.65958
384981.85	3775497.16	11.53773	385031.85	3775497.16	10.83091
385081.85	3775497.16	8.33926	385131.85	3775497.16	6.09473
385181.85	3775497.16	4.67247	385231.85	3775497.16	3.86238
385281.85	3775497.16	3.39500	385331.85	3775497.16	3.07100
385381.85	3775497.16	2.78825	385431.85	3775497.16	2.61014
385481.85	3775497.16	2.51319	385531.85	3775497.16	2.40388
385581.85	3775497.16	2.27566	384381.85	3775547.16	1.63225
384431.85	3775547.16	1.76836	384481.85	3775547.16	1.90282
384531.85	3775547.16	2.06434	384581.85	3775547.16	2.21727
384631.85	3775547.16	2.37737	384681.85	3775547.16	2.56056

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**MODELOPTs: NonDFAULT CONC FLAT and ELEV
NODRYDPLT NOWETDPLT

*** THE PERIOD (17520 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STCK1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
384731.85	3775547.16	2.86227	384781.85	3775547.16	3.41997
384831.85	3775547.16	4.41416	384881.85	3775547.16	5.97062
384931.85	3775547.16	7.90638	384981.85	3775547.16	9.43080
385031.85	3775547.16	9.27948	385081.85	3775547.16	7.56130
385131.85	3775547.16	5.71548	385181.85	3775547.16	4.41216
385231.85	3775547.16	3.59303	385281.85	3775547.16	3.10000
385331.85	3775547.16	2.77380	385381.85	3775547.16	2.50242
385431.85	3775547.16	2.31956	385481.85	3775547.16	2.20725
385531.85	3775547.16	2.10899	385581.85	3775547.16	2.02259
384381.85	3775597.16	1.45004	384431.85	3775597.16	1.56115
384481.85	3775597.16	1.67689	384531.85	3775597.16	1.80721
384581.85	3775597.16	1.92951	384631.85	3775597.16	2.06559
384681.85	3775597.16	2.23822	384731.85	3775597.16	2.51476
384781.85	3775597.16	3.01936	384831.85	3775597.16	3.84304
384881.85	3775597.16	5.07603	384931.85	3775597.16	6.51675
384981.85	3775597.16	7.78660	385031.85	3775597.16	7.89417
385081.85	3775597.16	6.75312	385131.85	3775597.16	5.28340
385181.85	3775597.16	4.13569	385231.85	3775597.16	3.36095
385281.85	3775597.16	2.86510	385331.85	3775597.16	2.53712
385381.85	3775597.16	2.29867	385431.85	3775597.16	2.10736
385481.85	3775597.16	1.98299	385531.85	3775597.16	1.88449
385581.85	3775597.16	1.80750	384806.79	3774976.36	55.08386
385122.31	3774915.85	22.21907	385163.43	3775122.08	18.15801
385103.55	3775167.54	18.36940	384825.01	3775049.22	31.25858
384825.35	3774972.80	112.53287	384843.91	3774969.24	174.09640
384862.47	3774965.68	263.01712	384881.03	3774962.12	339.10383
384899.59	3774958.56	387.71227	384918.15	3774955.00	304.49186
384936.71	3774951.44	158.18425	384955.27	3774947.88	76.19981
384973.83	3774944.33	49.65911	384992.39	3774940.77	37.83489
385010.95	3774937.21	31.55719	385029.51	3774933.65	27.44480
385048.07	3774930.09	24.30143	385066.63	3774926.53	21.46259
385085.19	3774922.97	19.33792	385103.75	3774919.41	24.17011
385126.05	3774934.60	25.73138	385129.79	3774953.35	27.55468
385133.52	3774972.09	27.76594	385137.26	3774990.84	27.32227
385141.00	3775009.59	30.21971	385144.74	3775028.34	33.41662
385148.48	3775047.09	37.39117	385152.22	3775065.84	37.71273
385155.95	3775084.58	31.44032	385159.69	3775103.33	21.33019
385148.46	3775133.45	17.94832	385133.49	3775144.81	18.02487
385118.52	3775156.17	18.33862	385086.14	3775160.15	23.11857
385068.73	3775152.75	28.19306	385051.32	3775145.35	30.14917

**MODELOPTs: NonDFAULT CONC FLAT and ELEV
NODRYDPLT NOWETDPLT

*** THE PERIOD (17520 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): STCK1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
385033.91	3775137.96	32.36756	385016.51	3775130.56	40.28427
384999.10	3775123.17	53.86546	384981.69	3775115.77	84.12516
384964.28	3775108.38	101.21829	384946.87	3775100.99	119.83881
384929.46	3775093.59	109.32096	384912.05	3775086.20	77.33630
384894.65	3775078.80	63.35872	384877.24	3775071.41	60.79985
384859.83	3775064.01	53.06004	384842.42	3775056.62	42.37093
384820.46	3775031.00	37.84316	384815.90	3775012.79	45.36494
384811.34	3774994.58	58.89438			

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 **MODELOPTs:  NonDFAULT CONC                                  FLAT and  ELEV
                                                               NODRYDPLT NOWETDPLT

                                      *** THE SUMMARY OF MAXIMUM PERIOD ( 17520 HRS) RESULTS ***


                                    ** CONC OF OTHER    IN MICROGRAMS/M**3                      **

                                                                                                          NETWORK
GROUP ID                      AVERAGE CONC               RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL      1ST HIGHEST VALUE IS     387.71227 AT (  384899.59,  3774958.56,   110.65,   110.65,    0.00)  DC
         2ND HIGHEST VALUE IS     343.50737 AT (  384881.85,  3774947.16,   110.34,   110.34,    0.00)  DC
         3RD HIGHEST VALUE IS     339.10383 AT (  384881.03,  3774962.12,   110.55,   110.55,    0.00)  DC
         4TH HIGHEST VALUE IS     304.49186 AT (  384918.15,  3774955.00,   110.76,   110.76,    0.00)  DC
         5TH HIGHEST VALUE IS     263.01712 AT (  384862.47,  3774965.68,   110.57,   110.57,    0.00)  DC
         6TH HIGHEST VALUE IS     174.09640 AT (  384843.91,  3774969.24,   110.31,   117.25,    0.00)  DC
         7TH HIGHEST VALUE IS     171.30043 AT (  384931.85,  3774947.16,   110.83,   110.83,    0.00)  DC
         8TH HIGHEST VALUE IS     158.18425 AT (  384936.71,  3774951.44,   110.90,   110.90,    0.00)  DC
         9TH HIGHEST VALUE IS     119.83881 AT (  384946.87,  3775100.99,   112.91,   127.03,    0.00)  DC
        10TH HIGHEST VALUE IS     116.34807 AT (  384831.85,  3774947.16,   107.90,   118.40,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR


 *** AERMOD - VERSION 09292 ***    *** C:\Users\jkoizumi\Documents\Lakes\ISCARMOD\2010\NamePlate\NNP\NNP.is ***        05/13/10
                                   ***                                                                ***        12:01:03
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 **MODELOPTs:  NonDFAULT CONC                                  FLAT and  ELEV
                                                               NODRYDPLT NOWETDPLT

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            0 Warning Message(s)
 A Total of          113 Informational Message(s)

 A Total of        17520 Hours Were Processed

 A Total of            0 Calm Hours Identified

 A Total of          113 Missing Hours Identified (  0.64 Percent)


    ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


    ********   WARNING MESSAGES   ********
              ***  NONE  ***


    ***********************************
    *** AERMOD Finishes Successfully ***
    ***********************************
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** AERMAP - VERSION 09040                                          05/13/10
**                                                                 11:59:23
**  Project: NNP
**
** A total of       1  NED files were used
** A total of     655  receptors were processed
** DOMAINLL -118.254735 34.103093 -118.239374 34.115870
** ANCHORXY  0.00  0.00  0.00  0.00  11 3
** TERRHGTS  EXTRACT

RE ELEVUNIT METERS
   DISCCART     384381.85   3774397.16     125.72     161.01
   DISCCART     384431.85   3774397.16     117.31     161.01
   DISCCART     384481.85   3774397.16     117.34     161.01
   DISCCART     384531.85   3774397.16     117.15     161.01
   DISCCART     384581.85   3774397.16     116.79     161.01
   DISCCART     384631.85   3774397.16     116.90     161.01
   DISCCART     384681.85   3774397.16     117.02     161.01
   DISCCART     384731.85   3774397.16     124.16     124.16
   DISCCART     384781.85   3774397.16     116.57     126.56
   DISCCART     384831.85   3774397.16     115.74     115.74
   DISCCART     384881.85   3774397.16     114.89     114.89
   DISCCART     384931.85   3774397.16     114.03     114.03
   DISCCART     384981.85   3774397.16     113.17     113.17
   DISCCART     385031.85   3774397.16     112.36     112.36
   DISCCART     385081.85   3774397.16     111.68     111.68
   DISCCART     385131.85   3774397.16     110.81     110.81
   DISCCART     385181.85   3774397.16     110.02     110.02
   DISCCART     385231.85   3774397.16     108.83     108.83
   DISCCART     385281.85   3774397.16     107.24     107.24
   DISCCART     385331.85   3774397.16     105.53     105.53
   DISCCART     385381.85   3774397.16     101.94     110.56
   DISCCART     385431.85   3774397.16     102.83     110.94
   DISCCART     385481.85   3774397.16     109.71     109.71
   DISCCART     385531.85   3774397.16     110.92     110.92
   DISCCART     385581.85   3774397.16     111.40     111.40
   DISCCART     384381.85   3774447.16     117.54     161.01
   DISCCART     384431.85   3774447.16     117.94     161.01
   DISCCART     384481.85   3774447.16     117.43     161.01
   DISCCART     384531.85   3774447.16     116.77     161.01
   DISCCART     384581.85   3774447.16     116.46     161.01
   DISCCART     384631.85   3774447.16     117.25     161.01
   DISCCART     384681.85   3774447.16     117.06     161.01
   DISCCART     384731.85   3774447.16     118.64     125.76
   DISCCART     384781.85   3774447.16     115.95     126.56
   DISCCART     384831.85   3774447.16     115.73     115.73
   DISCCART     384881.85   3774447.16     114.91     114.91
   DISCCART     384931.85   3774447.16     114.07     114.07
   DISCCART     384981.85   3774447.16     113.27     113.27
   DISCCART     385031.85   3774447.16     112.42     112.42
   DISCCART     385081.85   3774447.16     111.69     111.69
   DISCCART     385131.85   3774447.16     110.90     110.90
   DISCCART     385181.85   3774447.16     110.10     110.10
   DISCCART     385231.85   3774447.16     108.89     108.89
   DISCCART     385281.85   3774447.16     107.76     107.76
   DISCCART     385331.85   3774447.16     105.20     105.20
   DISCCART     385381.85   3774447.16     102.12     110.80
   DISCCART     385431.85   3774447.16     104.92     111.15
   DISCCART     385481.85   3774447.16     110.90     110.90
   DISCCART     385531.85   3774447.16     111.32     111.32
   DISCCART     385581.85   3774447.16     111.63     111.63
   DISCCART     384381.85   3774497.16     118.06     161.01
   DISCCART     384431.85   3774497.16     117.89     161.01
   DISCCART     384481.85   3774497.16     116.89     161.01
   DISCCART     384531.85   3774497.16     116.25     161.01
   DISCCART     384581.85   3774497.16     116.09     161.01
   DISCCART     384631.85   3774497.16     116.79     161.01
   DISCCART     384681.85   3774497.16     116.88     161.01
   DISCCART     384731.85   3774497.16     115.85     115.85
   DISCCART     384781.85   3774497.16     115.75     115.75
   DISCCART     384831.85   3774497.16     115.39     115.39
   DISCCART     384881.85   3774497.16     114.52     114.52
   DISCCART     384931.85   3774497.16     113.74     113.74
   DISCCART     384981.85   3774497.16     113.08     113.08
   DISCCART     385031.85   3774497.16     112.34     112.34
   DISCCART     385081.85   3774497.16     111.46     111.46
   DISCCART     385131.85   3774497.16     110.52     110.52
   DISCCART     385181.85   3774497.16     109.81     109.81
   DISCCART     385231.85   3774497.16     108.94     108.94
   DISCCART     385281.85   3774497.16     107.82     107.82
   DISCCART     385331.85   3774497.16     104.00     104.00
   DISCCART     385381.85   3774497.16     102.58     110.99
   DISCCART     385431.85   3774497.16     109.88     109.88
   DISCCART     385481.85   3774497.16     111.16     111.16
   DISCCART     385531.85   3774497.16     111.64     111.64
   DISCCART     385581.85   3774497.16     112.11     112.11
   DISCCART     384381.85   3774547.16     117.93     161.01
   DISCCART     384431.85   3774547.16     117.52     161.01
   DISCCART     384481.85   3774547.16     116.39     161.01
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DISCCART	384531.85	3774547.16	115.67	161.01
DISCCART	384581.85	3774547.16	115.48	161.01
DISCCART	384631.85	3774547.16	116.02	161.01
DISCCART	384681.85	3774547.16	116.08	161.01
DISCCART	384731.85	3774547.16	114.50	114.50
DISCCART	384781.85	3774547.16	114.87	114.87
DISCCART	384831.85	3774547.16	114.70	114.70
DISCCART	384881.85	3774547.16	113.78	113.78
DISCCART	384931.85	3774547.16	113.21	113.21
DISCCART	384981.85	3774547.16	112.63	112.63
DISCCART	385031.85	3774547.16	112.01	112.01
DISCCART	385081.85	3774547.16	111.32	111.32
DISCCART	385131.85	3774547.16	110.71	110.71
DISCCART	385181.85	3774547.16	109.76	109.76
DISCCART	385231.85	3774547.16	108.61	108.61
DISCCART	385281.85	3774547.16	107.07	107.59
DISCCART	385331.85	3774547.16	102.60	110.88
DISCCART	385381.85	3774547.16	103.49	111.38
DISCCART	385431.85	3774547.16	110.96	110.96
DISCCART	385481.85	3774547.16	111.45	111.45
DISCCART	385531.85	3774547.16	111.97	111.97
DISCCART	385581.85	3774547.16	112.45	112.45
DISCCART	384381.85	3774597.16	117.24	161.01
DISCCART	384431.85	3774597.16	116.68	161.01
DISCCART	384481.85	3774597.16	115.82	161.01
DISCCART	384531.85	3774597.16	115.19	161.01
DISCCART	384581.85	3774597.16	114.84	161.01
DISCCART	384631.85	3774597.16	115.09	161.01
DISCCART	384681.85	3774597.16	114.92	161.01
DISCCART	384731.85	3774597.16	113.29	113.29
DISCCART	384781.85	3774597.16	113.48	113.48
DISCCART	384831.85	3774597.16	113.48	113.48
DISCCART	384881.85	3774597.16	112.69	112.69
DISCCART	384931.85	3774597.16	112.30	112.30
DISCCART	384981.85	3774597.16	112.06	112.06
DISCCART	385031.85	3774597.16	111.46	111.46
DISCCART	385081.85	3774597.16	110.91	110.91
DISCCART	385131.85	3774597.16	110.18	110.18
DISCCART	385181.85	3774597.16	109.15	109.15
DISCCART	385231.85	3774597.16	107.81	107.81
DISCCART	385281.85	3774597.16	103.03	107.82
DISCCART	385331.85	3774597.16	102.57	111.40
DISCCART	385381.85	3774597.16	110.23	110.23
DISCCART	385431.85	3774597.16	111.31	111.31
DISCCART	385481.85	3774597.16	111.83	111.83
DISCCART	385531.85	3774597.16	112.33	112.33
DISCCART	385581.85	3774597.16	112.81	112.81
DISCCART	384381.85	3774647.16	116.23	161.01
DISCCART	384431.85	3774647.16	115.86	161.01
DISCCART	384481.85	3774647.16	115.14	161.01
DISCCART	384531.85	3774647.16	114.52	161.01
DISCCART	384581.85	3774647.16	114.04	161.01
DISCCART	384631.85	3774647.16	114.08	161.01
DISCCART	384681.85	3774647.16	113.84	113.84
DISCCART	384731.85	3774647.16	112.07	112.07
DISCCART	384781.85	3774647.16	112.10	112.10
DISCCART	384831.85	3774647.16	112.26	112.26
DISCCART	384881.85	3774647.16	111.64	111.64
DISCCART	384931.85	3774647.16	111.14	111.14
DISCCART	384981.85	3774647.16	111.13	111.13
DISCCART	385031.85	3774647.16	110.81	110.81
DISCCART	385081.85	3774647.16	110.01	110.01
DISCCART	385131.85	3774647.16	109.20	109.20
DISCCART	385181.85	3774647.16	108.00	108.00
DISCCART	385231.85	3774647.16	104.04	107.84
DISCCART	385281.85	3774647.16	102.89	111.06
DISCCART	385331.85	3774647.16	107.63	111.06
DISCCART	385381.85	3774647.16	111.19	111.19
DISCCART	385431.85	3774647.16	111.86	111.86
DISCCART	385481.85	3774647.16	112.50	112.50
DISCCART	385531.85	3774647.16	112.79	112.79
DISCCART	385581.85	3774647.16	113.16	113.16
DISCCART	384381.85	3774697.16	115.14	161.01
DISCCART	384431.85	3774697.16	114.68	161.01
DISCCART	384481.85	3774697.16	114.08	161.01
DISCCART	384531.85	3774697.16	113.49	161.01
DISCCART	384581.85	3774697.16	113.15	161.01
DISCCART	384631.85	3774697.16	113.22	113.22
DISCCART	384681.85	3774697.16	112.94	112.94
DISCCART	384731.85	3774697.16	111.31	111.31
DISCCART	384781.85	3774697.16	111.14	111.14
DISCCART	384831.85	3774697.16	110.93	110.93
DISCCART	384881.85	3774697.16	110.75	110.75
DISCCART	384931.85	3774697.16	110.18	110.18
DISCCART	384981.85	3774697.16	110.32	110.32
DISCCART	385031.85	3774697.16	110.60	110.60
DISCCART	385081.85	3774697.16	109.14	109.14
DISCCART	385131.85	3774697.16	107.77	107.77
DISCCART	385181.85	3774697.16	103.72	108.22

DISCCART	385231.85	3774697.16	102.91	111.14
DISCCART	385281.85	3774697.16	106.00	111.08
DISCCART	385331.85	3774697.16	111.05	111.05
DISCCART	385381.85	3774697.16	111.78	111.78
DISCCART	385431.85	3774697.16	112.53	112.53
DISCCART	385481.85	3774697.16	113.27	113.27
DISCCART	385531.85	3774697.16	113.44	113.44
DISCCART	385581.85	3774697.16	113.77	113.77
DISCCART	384381.85	3774747.16	113.56	161.01
DISCCART	384431.85	3774747.16	113.35	161.01
DISCCART	384481.85	3774747.16	112.87	161.01
DISCCART	384531.85	3774747.16	112.40	161.01
DISCCART	384581.85	3774747.16	112.14	112.14
DISCCART	384631.85	3774747.16	112.35	112.35
DISCCART	384681.85	3774747.16	112.21	112.21
DISCCART	384731.85	3774747.16	110.81	110.81
DISCCART	384781.85	3774747.16	110.54	110.54
DISCCART	384831.85	3774747.16	110.10	110.10
DISCCART	384881.85	3774747.16	109.65	109.65
DISCCART	384931.85	3774747.16	109.35	109.35
DISCCART	384981.85	3774747.16	109.46	109.46
DISCCART	385031.85	3774747.16	109.40	109.40
DISCCART	385081.85	3774747.16	105.89	109.90
DISCCART	385131.85	3774747.16	103.57	103.57
DISCCART	385181.85	3774747.16	103.26	111.21
DISCCART	385231.85	3774747.16	107.52	110.88
DISCCART	385281.85	3774747.16	110.91	110.91
DISCCART	385331.85	3774747.16	111.64	111.64
DISCCART	385381.85	3774747.16	112.33	112.33
DISCCART	385431.85	3774747.16	113.05	113.05
DISCCART	385481.85	3774747.16	113.77	113.77
DISCCART	385531.85	3774747.16	114.26	114.26
DISCCART	385581.85	3774747.16	114.92	114.92
DISCCART	384381.85	3774797.16	112.06	161.01
DISCCART	384431.85	3774797.16	112.06	161.01
DISCCART	384481.85	3774797.16	111.85	161.01
DISCCART	384531.85	3774797.16	111.12	111.12
DISCCART	384581.85	3774797.16	111.01	111.01
DISCCART	384631.85	3774797.16	111.41	111.41
DISCCART	384681.85	3774797.16	111.08	111.08
DISCCART	384731.85	3774797.16	110.63	110.63
DISCCART	384781.85	3774797.16	109.93	109.93
DISCCART	384831.85	3774797.16	109.05	109.05
DISCCART	384881.85	3774797.16	108.39	108.39
DISCCART	384931.85	3774797.16	107.73	107.73
DISCCART	384981.85	3774797.16	107.00	107.97
DISCCART	385031.85	3774797.16	103.96	110.74
DISCCART	385081.85	3774797.16	103.54	110.41
DISCCART	385131.85	3774797.16	103.90	111.89
DISCCART	385181.85	3774797.16	107.35	111.21
DISCCART	385231.85	3774797.16	111.06	111.06
DISCCART	385281.85	3774797.16	111.64	111.64
DISCCART	385331.85	3774797.16	112.20	112.20
DISCCART	385381.85	3774797.16	112.86	112.86
DISCCART	385431.85	3774797.16	113.56	113.56
DISCCART	385481.85	3774797.16	114.28	114.28
DISCCART	385531.85	3774797.16	115.05	115.05
DISCCART	385581.85	3774797.16	115.87	115.87
DISCCART	384381.85	3774847.16	108.38	161.01
DISCCART	384431.85	3774847.16	108.63	110.84
DISCCART	384481.85	3774847.16	108.57	110.71
DISCCART	384531.85	3774847.16	108.16	108.16
DISCCART	384581.85	3774847.16	108.18	110.42
DISCCART	384631.85	3774847.16	108.55	108.55
DISCCART	384681.85	3774847.16	108.73	108.73
DISCCART	384731.85	3774847.16	107.75	110.45
DISCCART	384781.85	3774847.16	106.24	109.88
DISCCART	384831.85	3774847.16	105.37	108.15
DISCCART	384881.85	3774847.16	104.67	107.58
DISCCART	384931.85	3774847.16	103.93	103.93
DISCCART	384981.85	3774847.16	103.68	111.12
DISCCART	385031.85	3774847.16	103.63	111.57
DISCCART	385081.85	3774847.16	106.59	111.39
DISCCART	385131.85	3774847.16	110.10	110.94
DISCCART	385181.85	3774847.16	111.73	111.73
DISCCART	385231.85	3774847.16	112.30	112.30
DISCCART	385281.85	3774847.16	112.37	112.37
DISCCART	385331.85	3774847.16	112.70	112.70
DISCCART	385381.85	3774847.16	113.36	113.36
DISCCART	385431.85	3774847.16	114.08	114.08
DISCCART	385481.85	3774847.16	114.79	114.79
DISCCART	385531.85	3774847.16	115.58	115.58
DISCCART	385581.85	3774847.16	116.49	116.49
DISCCART	384381.85	3774897.16	107.00	109.94
DISCCART	384431.85	3774897.16	107.00	107.00
DISCCART	384481.85	3774897.16	106.69	106.69
DISCCART	384531.85	3774897.16	106.38	106.38
DISCCART	384581.85	3774897.16	105.82	105.82
DISCCART	384631.85	3774897.16	104.98	104.98

DISCCART	384681.85	3774897.16	104.60	104.60
DISCCART	384731.85	3774897.16	103.81	117.25
DISCCART	384781.85	3774897.16	104.04	117.25
DISCCART	384831.85	3774897.16	104.16	117.25
DISCCART	384881.85	3774897.16	103.85	110.80
DISCCART	384931.85	3774897.16	105.67	110.80
DISCCART	384981.85	3774897.16	106.71	111.12
DISCCART	385031.85	3774897.16	110.77	110.77
DISCCART	385081.85	3774897.16	111.43	111.43
DISCCART	385131.85	3774897.16	112.19	112.19
DISCCART	385181.85	3774897.16	113.22	113.22
DISCCART	385231.85	3774897.16	113.45	113.45
DISCCART	385281.85	3774897.16	113.04	113.04
DISCCART	385331.85	3774897.16	113.14	113.14
DISCCART	385381.85	3774897.16	113.86	113.86
DISCCART	385431.85	3774897.16	114.58	114.58
DISCCART	385481.85	3774897.16	115.36	115.36
DISCCART	385531.85	3774897.16	116.22	116.22
DISCCART	385581.85	3774897.16	117.37	117.37
DISCCART	384381.85	3774947.16	110.84	110.84
DISCCART	384431.85	3774947.16	110.73	110.73
DISCCART	384481.85	3774947.16	110.14	110.14
DISCCART	384531.85	3774947.16	109.68	109.68
DISCCART	384581.85	3774947.16	109.09	109.09
DISCCART	384631.85	3774947.16	107.95	107.95
DISCCART	384681.85	3774947.16	106.92	111.10
DISCCART	384731.85	3774947.16	105.45	118.40
DISCCART	384781.85	3774947.16	105.65	119.42
DISCCART	384831.85	3774947.16	107.90	118.40
DISCCART	384881.85	3774947.16	110.34	110.34
DISCCART	384931.85	3774947.16	110.83	110.83
DISCCART	385131.85	3774947.16	113.16	113.16
DISCCART	385181.85	3774947.16	113.75	113.75
DISCCART	385231.85	3774947.16	113.95	113.95
DISCCART	385281.85	3774947.16	113.70	113.70
DISCCART	385331.85	3774947.16	113.61	113.61
DISCCART	385381.85	3774947.16	114.33	114.33
DISCCART	385431.85	3774947.16	115.07	115.07
DISCCART	385481.85	3774947.16	115.84	115.84
DISCCART	385531.85	3774947.16	116.87	116.87
DISCCART	385581.85	3774947.16	118.40	118.40
DISCCART	384381.85	3774997.16	111.59	111.59
DISCCART	384431.85	3774997.16	111.57	111.57
DISCCART	384481.85	3774997.16	111.37	111.37
DISCCART	384531.85	3774997.16	111.17	111.17
DISCCART	384581.85	3774997.16	111.05	111.05
DISCCART	384631.85	3774997.16	111.19	111.19
DISCCART	384681.85	3774997.16	111.09	111.09
DISCCART	384731.85	3774997.16	111.49	117.10
DISCCART	384781.85	3774997.16	113.36	118.40
DISCCART	385181.85	3774997.16	114.09	114.09
DISCCART	385231.85	3774997.16	114.29	114.29
DISCCART	385281.85	3774997.16	114.18	114.18
DISCCART	385331.85	3774997.16	114.33	114.33
DISCCART	385381.85	3774997.16	114.93	114.93
DISCCART	385431.85	3774997.16	115.58	115.58
DISCCART	385481.85	3774997.16	116.38	116.38
DISCCART	385531.85	3774997.16	117.68	117.68
DISCCART	385581.85	3774997.16	119.23	119.23
DISCCART	384381.85	3775047.16	112.21	112.21
DISCCART	384431.85	3775047.16	112.15	112.15
DISCCART	384481.85	3775047.16	112.09	112.09
DISCCART	384531.85	3775047.16	111.98	111.98
DISCCART	384581.85	3775047.16	111.91	111.91
DISCCART	384631.85	3775047.16	111.98	111.98
DISCCART	384681.85	3775047.16	112.31	112.31
DISCCART	384731.85	3775047.16	114.60	114.60
DISCCART	384781.85	3775047.16	117.73	117.73
DISCCART	385181.85	3775047.16	114.48	114.48
DISCCART	385231.85	3775047.16	114.68	114.68
DISCCART	385281.85	3775047.16	114.85	114.85
DISCCART	385331.85	3775047.16	115.06	115.06
DISCCART	385381.85	3775047.16	115.54	115.54
DISCCART	385431.85	3775047.16	116.17	116.17
DISCCART	385481.85	3775047.16	117.04	117.04
DISCCART	385531.85	3775047.16	118.37	118.37
DISCCART	385581.85	3775047.16	119.99	119.99
DISCCART	384381.85	3775097.16	112.70	112.70
DISCCART	384431.85	3775097.16	112.81	112.81
DISCCART	384481.85	3775097.16	112.84	112.84
DISCCART	384531.85	3775097.16	112.80	112.80
DISCCART	384581.85	3775097.16	112.67	112.67
DISCCART	384631.85	3775097.16	112.98	112.98
DISCCART	384681.85	3775097.16	113.37	113.37
DISCCART	384731.85	3775097.16	114.15	114.15
DISCCART	384781.85	3775097.16	116.31	116.31
DISCCART	384831.85	3775097.16	120.35	120.35
DISCCART	384881.85	3775097.16	121.42	126.08
DISCCART	384931.85	3775097.16	113.95	127.03

DISCCART	385181.85	3775097.16	115.15	115.15
DISCCART	385231.85	3775097.16	115.65	115.65
DISCCART	385281.85	3775097.16	115.61	115.61
DISCCART	385331.85	3775097.16	115.63	115.63
DISCCART	385381.85	3775097.16	115.90	115.90
DISCCART	385431.85	3775097.16	116.56	116.56
DISCCART	385481.85	3775097.16	117.61	117.61
DISCCART	385531.85	3775097.16	118.84	118.84
DISCCART	385581.85	3775097.16	120.42	120.42
DISCCART	384381.85	3775147.16	113.43	113.43
DISCCART	384431.85	3775147.16	113.56	113.56
DISCCART	384481.85	3775147.16	113.71	113.71
DISCCART	384531.85	3775147.16	113.77	113.77
DISCCART	384581.85	3775147.16	113.77	113.77
DISCCART	384631.85	3775147.16	114.06	114.06
DISCCART	384681.85	3775147.16	114.24	114.24
DISCCART	384731.85	3775147.16	114.37	114.37
DISCCART	384781.85	3775147.16	115.21	126.08
DISCCART	384831.85	3775147.16	116.78	127.03
DISCCART	384881.85	3775147.16	125.30	125.30
DISCCART	384931.85	3775147.16	124.49	126.57
DISCCART	384981.85	3775147.16	116.36	127.03
DISCCART	385031.85	3775147.16	113.97	127.03
DISCCART	385131.85	3775147.16	115.38	115.38
DISCCART	385181.85	3775147.16	116.01	116.01
DISCCART	385231.85	3775147.16	116.53	116.53
DISCCART	385281.85	3775147.16	116.07	116.07
DISCCART	385331.85	3775147.16	116.13	116.13
DISCCART	385381.85	3775147.16	116.41	116.41
DISCCART	385431.85	3775147.16	116.47	116.47
DISCCART	385481.85	3775147.16	117.13	117.13
DISCCART	385531.85	3775147.16	118.46	118.46
DISCCART	385581.85	3775147.16	120.13	120.13
DISCCART	384381.85	3775197.16	114.03	114.03
DISCCART	384431.85	3775197.16	114.40	114.40
DISCCART	384481.85	3775197.16	114.63	114.63
DISCCART	384531.85	3775197.16	114.82	114.82
DISCCART	384581.85	3775197.16	115.08	115.08
DISCCART	384631.85	3775197.16	115.18	115.18
DISCCART	384681.85	3775197.16	114.99	114.99
DISCCART	384731.85	3775197.16	114.89	114.89
DISCCART	384781.85	3775197.16	115.24	115.24
DISCCART	384831.85	3775197.16	115.64	127.03
DISCCART	384881.85	3775197.16	115.95	127.03
DISCCART	384931.85	3775197.16	123.99	124.58
DISCCART	384981.85	3775197.16	126.09	126.09
DISCCART	385031.85	3775197.16	115.94	126.31
DISCCART	385081.85	3775197.16	115.30	126.31
DISCCART	385131.85	3775197.16	116.14	116.14
DISCCART	385181.85	3775197.16	117.30	117.30
DISCCART	385231.85	3775197.16	117.61	117.61
DISCCART	385281.85	3775197.16	116.35	116.35
DISCCART	385331.85	3775197.16	116.52	116.52
DISCCART	385381.85	3775197.16	116.92	116.92
DISCCART	385431.85	3775197.16	116.87	116.87
DISCCART	385481.85	3775197.16	116.54	116.54
DISCCART	385531.85	3775197.16	117.76	117.76
DISCCART	385581.85	3775197.16	119.64	119.64
DISCCART	384381.85	3775247.16	114.54	114.54
DISCCART	384431.85	3775247.16	114.87	114.87
DISCCART	384481.85	3775247.16	115.27	115.27
DISCCART	384531.85	3775247.16	115.61	115.61
DISCCART	384581.85	3775247.16	115.93	115.93
DISCCART	384631.85	3775247.16	116.19	116.19
DISCCART	384681.85	3775247.16	115.88	115.88
DISCCART	384731.85	3775247.16	115.56	115.56
DISCCART	384781.85	3775247.16	115.73	115.73
DISCCART	384831.85	3775247.16	115.89	127.03
DISCCART	384881.85	3775247.16	116.02	127.03
DISCCART	384931.85	3775247.16	117.18	127.03
DISCCART	384981.85	3775247.16	118.72	126.31
DISCCART	385031.85	3775247.16	116.27	126.31
DISCCART	385081.85	3775247.16	115.97	122.76
DISCCART	385131.85	3775247.16	119.01	119.95
DISCCART	385181.85	3775247.16	119.56	119.56
DISCCART	385231.85	3775247.16	118.67	118.67
DISCCART	385281.85	3775247.16	116.61	116.61
DISCCART	385331.85	3775247.16	116.83	116.83
DISCCART	385381.85	3775247.16	117.63	117.63
DISCCART	385431.85	3775247.16	117.38	117.38
DISCCART	385481.85	3775247.16	116.65	116.65
DISCCART	385531.85	3775247.16	116.81	116.81
DISCCART	385581.85	3775247.16	119.41	119.41
DISCCART	384381.85	3775297.16	115.01	115.01
DISCCART	384431.85	3775297.16	115.35	115.35
DISCCART	384481.85	3775297.16	115.80	115.80
DISCCART	384531.85	3775297.16	116.15	116.15
DISCCART	384581.85	3775297.16	116.52	116.52
DISCCART	384631.85	3775297.16	116.82	116.82

DISCCART	384681.85	3775297.16	116.77	116.77
DISCCART	384731.85	3775297.16	116.37	116.37
DISCCART	384781.85	3775297.16	116.14	116.14
DISCCART	384831.85	3775297.16	116.39	116.39
DISCCART	384881.85	3775297.16	116.52	116.52
DISCCART	384931.85	3775297.16	116.70	116.70
DISCCART	384981.85	3775297.16	116.98	124.97
DISCCART	385031.85	3775297.16	117.52	117.52
DISCCART	385081.85	3775297.16	119.83	122.64
DISCCART	385131.85	3775297.16	122.64	122.64
DISCCART	385181.85	3775297.16	121.99	121.99
DISCCART	385231.85	3775297.16	120.25	120.25
DISCCART	385281.85	3775297.16	117.96	117.96
DISCCART	385331.85	3775297.16	117.47	117.47
DISCCART	385381.85	3775297.16	118.00	118.00
DISCCART	385431.85	3775297.16	117.86	117.86
DISCCART	385481.85	3775297.16	116.97	116.97
DISCCART	385531.85	3775297.16	116.93	116.93
DISCCART	385581.85	3775297.16	119.65	119.65
DISCCART	384381.85	3775347.16	115.44	115.44
DISCCART	384431.85	3775347.16	115.82	115.82
DISCCART	384481.85	3775347.16	116.23	116.23
DISCCART	384531.85	3775347.16	116.64	116.64
DISCCART	384581.85	3775347.16	116.97	116.97
DISCCART	384631.85	3775347.16	117.27	117.27
DISCCART	384681.85	3775347.16	117.37	117.37
DISCCART	384731.85	3775347.16	117.02	117.02
DISCCART	384781.85	3775347.16	116.64	116.64
DISCCART	384831.85	3775347.16	116.79	116.79
DISCCART	384881.85	3775347.16	116.80	116.80
DISCCART	384931.85	3775347.16	116.64	116.64
DISCCART	384981.85	3775347.16	117.50	117.50
DISCCART	385031.85	3775347.16	118.46	118.46
DISCCART	385081.85	3775347.16	121.30	121.30
DISCCART	385131.85	3775347.16	122.60	122.60
DISCCART	385181.85	3775347.16	122.62	122.62
DISCCART	385231.85	3775347.16	121.88	121.88
DISCCART	385281.85	3775347.16	120.51	120.51
DISCCART	385331.85	3775347.16	118.90	118.90
DISCCART	385381.85	3775347.16	118.40	118.40
DISCCART	385431.85	3775347.16	118.13	118.13
DISCCART	385481.85	3775347.16	117.79	117.79
DISCCART	385531.85	3775347.16	117.91	117.91
DISCCART	385581.85	3775347.16	119.48	119.48
DISCCART	384381.85	3775397.16	115.94	115.94
DISCCART	384431.85	3775397.16	116.25	116.25
DISCCART	384481.85	3775397.16	116.72	116.72
DISCCART	384531.85	3775397.16	117.14	117.14
DISCCART	384581.85	3775397.16	117.54	117.54
DISCCART	384631.85	3775397.16	117.71	117.71
DISCCART	384681.85	3775397.16	117.82	117.82
DISCCART	384731.85	3775397.16	117.65	117.65
DISCCART	384781.85	3775397.16	117.44	117.44
DISCCART	384831.85	3775397.16	117.42	117.42
DISCCART	384881.85	3775397.16	117.31	117.31
DISCCART	384931.85	3775397.16	117.44	117.44
DISCCART	384981.85	3775397.16	117.69	117.69
DISCCART	385031.85	3775397.16	118.49	118.49
DISCCART	385081.85	3775397.16	119.73	119.73
DISCCART	385131.85	3775397.16	121.64	121.64
DISCCART	385181.85	3775397.16	122.51	122.51
DISCCART	385231.85	3775397.16	122.64	122.64
DISCCART	385281.85	3775397.16	120.63	120.63
DISCCART	385331.85	3775397.16	119.50	119.50
DISCCART	385381.85	3775397.16	119.48	119.48
DISCCART	385431.85	3775397.16	119.53	119.53
DISCCART	385481.85	3775397.16	119.63	119.63
DISCCART	385531.85	3775397.16	119.80	119.80
DISCCART	385581.85	3775397.16	120.63	120.63
DISCCART	384381.85	3775447.16	116.46	116.46
DISCCART	384431.85	3775447.16	116.75	116.75
DISCCART	384481.85	3775447.16	117.23	117.23
DISCCART	384531.85	3775447.16	117.80	117.80
DISCCART	384581.85	3775447.16	118.04	118.04
DISCCART	384631.85	3775447.16	118.27	118.27
DISCCART	384681.85	3775447.16	118.29	118.29
DISCCART	384731.85	3775447.16	118.40	118.40
DISCCART	384781.85	3775447.16	118.31	118.31
DISCCART	384831.85	3775447.16	118.08	118.08
DISCCART	384881.85	3775447.16	117.99	117.99
DISCCART	384931.85	3775447.16	118.07	118.07
DISCCART	384981.85	3775447.16	118.14	118.14
DISCCART	385031.85	3775447.16	118.50	118.50
DISCCART	385081.85	3775447.16	119.05	119.05
DISCCART	385131.85	3775447.16	119.80	119.80
DISCCART	385181.85	3775447.16	120.72	120.72
DISCCART	385231.85	3775447.16	121.04	121.04
DISCCART	385281.85	3775447.16	120.21	120.21
DISCCART	385331.85	3775447.16	120.23	120.23

DISCCART	385381.85	3775447.16	121.14	121.14
DISCCART	385431.85	3775447.16	121.36	121.36
DISCCART	385481.85	3775447.16	120.90	120.90
DISCCART	385531.85	3775447.16	120.95	120.95
DISCCART	385581.85	3775447.16	121.58	121.58
DISCCART	384381.85	3775497.16	117.25	117.25
DISCCART	384431.85	3775497.16	117.53	117.53
DISCCART	384481.85	3775497.16	117.87	117.87
DISCCART	384531.85	3775497.16	118.31	118.31
DISCCART	384581.85	3775497.16	118.54	118.54
DISCCART	384631.85	3775497.16	118.74	118.74
DISCCART	384681.85	3775497.16	119.09	119.09
DISCCART	384731.85	3775497.16	119.02	119.02
DISCCART	384781.85	3775497.16	119.06	119.06
DISCCART	384831.85	3775497.16	118.95	118.95
DISCCART	384881.85	3775497.16	118.74	118.74
DISCCART	384931.85	3775497.16	118.61	118.61
DISCCART	384981.85	3775497.16	118.67	118.67
DISCCART	385031.85	3775497.16	118.85	118.85
DISCCART	385081.85	3775497.16	118.97	118.97
DISCCART	385131.85	3775497.16	119.37	119.37
DISCCART	385181.85	3775497.16	119.76	119.76
DISCCART	385231.85	3775497.16	119.96	119.96
DISCCART	385281.85	3775497.16	120.11	120.11
DISCCART	385331.85	3775497.16	120.61	120.61
DISCCART	385381.85	3775497.16	122.03	122.03
DISCCART	385431.85	3775497.16	122.55	122.55
DISCCART	385481.85	3775497.16	121.90	121.90
DISCCART	385531.85	3775497.16	121.51	121.51
DISCCART	385581.85	3775497.16	121.82	121.82
DISCCART	384381.85	3775547.16	118.38	118.38
DISCCART	384431.85	3775547.16	118.49	118.49
DISCCART	384481.85	3775547.16	118.79	118.79
DISCCART	384531.85	3775547.16	118.90	118.90
DISCCART	384581.85	3775547.16	119.16	119.16
DISCCART	384631.85	3775547.16	119.38	119.38
DISCCART	384681.85	3775547.16	119.72	119.72
DISCCART	384731.85	3775547.16	119.89	119.89
DISCCART	384781.85	3775547.16	119.90	119.90
DISCCART	384831.85	3775547.16	119.89	119.89
DISCCART	384881.85	3775547.16	119.64	119.64
DISCCART	384931.85	3775547.16	119.41	119.41
DISCCART	384981.85	3775547.16	119.33	119.33
DISCCART	385031.85	3775547.16	119.39	119.39
DISCCART	385081.85	3775547.16	119.31	119.31
DISCCART	385131.85	3775547.16	119.36	119.36
DISCCART	385181.85	3775547.16	119.55	119.55
DISCCART	385231.85	3775547.16	119.83	119.83
DISCCART	385281.85	3775547.16	120.11	120.11
DISCCART	385331.85	3775547.16	120.67	120.67
DISCCART	385381.85	3775547.16	121.99	121.99
DISCCART	385431.85	3775547.16	122.68	122.68
DISCCART	385481.85	3775547.16	122.62	122.62
DISCCART	385531.85	3775547.16	122.39	122.39
DISCCART	385581.85	3775547.16	122.03	122.03
DISCCART	384381.85	3775597.16	119.43	119.43
DISCCART	384431.85	3775597.16	119.54	119.54
DISCCART	384481.85	3775597.16	119.73	119.73
DISCCART	384531.85	3775597.16	119.78	119.78
DISCCART	384581.85	3775597.16	119.98	119.98
DISCCART	384631.85	3775597.16	120.17	120.17
DISCCART	384681.85	3775597.16	120.44	120.44
DISCCART	384731.85	3775597.16	120.65	120.65
DISCCART	384781.85	3775597.16	120.71	120.71
DISCCART	384831.85	3775597.16	120.77	120.77
DISCCART	384881.85	3775597.16	120.62	120.62
DISCCART	384931.85	3775597.16	120.15	120.15
DISCCART	384981.85	3775597.16	120.07	120.07
DISCCART	385031.85	3775597.16	119.96	119.96
DISCCART	385081.85	3775597.16	119.79	119.79
DISCCART	385131.85	3775597.16	119.63	119.63
DISCCART	385181.85	3775597.16	119.74	119.74
DISCCART	385231.85	3775597.16	119.93	119.93
DISCCART	385281.85	3775597.16	120.22	120.22
DISCCART	385331.85	3775597.16	120.69	120.69
DISCCART	385381.85	3775597.16	121.43	121.43
DISCCART	385431.85	3775597.16	122.46	122.46
DISCCART	385481.85	3775597.16	122.65	122.65
DISCCART	385531.85	3775597.16	122.68	122.68
DISCCART	385581.85	3775597.16	122.39	122.39
DISCCART	384806.79	3774976.36	109.22	119.42
DISCCART	385122.31	3774915.85	112.48	112.48
DISCCART	385163.43	3775122.08	115.38	115.38
DISCCART	385103.55	3775167.54	115.19	115.19
DISCCART	384825.01	3775049.22	117.76	117.76
DISCCART	384825.35	3774972.80	109.93	118.40
DISCCART	384843.91	3774969.24	110.31	117.25
DISCCART	384862.47	3774965.68	110.57	110.57
DISCCART	384881.03	3774962.12	110.55	110.55

DISCCART	384899.59	3774958.56	110.65	110.65
DISCCART	384918.15	3774955.00	110.76	110.76
DISCCART	384936.71	3774951.44	110.90	110.90
DISCCART	384955.27	3774947.88	111.11	111.11
DISCCART	384973.83	3774944.33	111.19	111.19
DISCCART	384992.39	3774940.77	111.38	111.38
DISCCART	385010.95	3774937.21	111.54	111.54
DISCCART	385029.51	3774933.65	111.63	111.63
DISCCART	385048.07	3774930.09	111.74	111.74
DISCCART	385066.63	3774926.53	111.89	111.89
DISCCART	385085.19	3774922.97	112.05	112.05
DISCCART	385103.75	3774919.41	112.21	112.21
DISCCART	385126.05	3774934.60	112.87	112.87
DISCCART	385129.79	3774953.35	113.21	113.21
DISCCART	385133.52	3774972.09	113.52	113.52
DISCCART	385137.26	3774990.84	113.70	113.70
DISCCART	385141.00	3775009.59	113.86	113.86
DISCCART	385144.74	3775028.34	114.06	114.06
DISCCART	385148.48	3775047.09	114.24	114.24
DISCCART	385152.22	3775065.84	114.43	114.43
DISCCART	385155.95	3775084.58	114.72	114.72
DISCCART	385159.69	3775103.33	115.04	115.04
DISCCART	385148.46	3775133.45	115.37	115.37
DISCCART	385133.49	3775144.81	115.36	115.36
DISCCART	385118.52	3775156.17	115.30	115.30
DISCCART	385086.14	3775160.15	114.71	126.31
DISCCART	385068.73	3775152.75	114.28	126.31
DISCCART	385051.32	3775145.35	113.96	126.57
DISCCART	385033.91	3775137.96	113.65	127.03
DISCCART	385016.51	3775130.56	113.21	127.03
DISCCART	384999.10	3775123.17	112.56	127.03
DISCCART	384981.69	3775115.77	112.14	127.03
DISCCART	384964.28	3775108.38	112.75	127.03
DISCCART	384946.87	3775100.99	112.91	127.03
DISCCART	384929.46	3775093.59	113.69	127.03
DISCCART	384912.05	3775086.20	115.68	127.03
DISCCART	384894.65	3775078.80	116.05	127.03
DISCCART	384877.24	3775071.41	117.46	126.08
DISCCART	384859.83	3775064.01	116.33	126.08
DISCCART	384842.42	3775056.62	116.80	126.08
DISCCART	384820.46	3775031.00	116.93	116.93
DISCCART	384815.90	3775012.79	116.35	116.35
DISCCART	384811.34	3774994.58	113.06	118.40

Table B-3
Diemethyl Carbonate Carcinogenic Health Risk Analysis

Dimethyl Carbonate Cancer Potency Factor

Description	Inhalation Unit Risk, (ug/m3)-1	DBR, (L/kg-day)	DMC Cancer Potency, (mg/kg-day)-1
Methanol	1.00E-06	302	3.31E-03

EPA interim inhalation unit risk value, Toxicological Review of Methanol(CAS No. 67-56-1)in Support of Summary Information on the Integrated Risk Information System (IRIS), EPA/635/R-09/013, December 2009, http://oaspub.epa.gov/eims/eimscomm.getfile?p_download_id=494156.

Tier IV - Carcinogenic Health Risk Evaluation of Dimethyl Carbonate

Receptor Type	Total DMC Usage, gal/yr	DMC Density, lb/gal	DMC Emissions, g/sec	Maximum Modeled DMC Conc., (ug/m3)	Maximum Modeled DMC Conc., (ug/m3)	Effective Methanol Conc., (ug/m3)	DMC Cancer Potency, (mg/kg-day)-1	Daily Breathing Rate, (L/kg-day)	Exposure Frequency, day/year	Exposure Duration, year	Averaging Time Period, day	Cancer Health Risk in One Million
Sensitive	327	8.92	0.042	48.6	3.1	2.2	0.0033	302	350	70	25,550	2.1
Worker	327	8.92	0.042	387.7	17.7	11.6	0.0033	149	245	40	25,550	3.3

C3H6O3 + 2H2O -> 3CH3OH + H2CO3
(1 gram C3H6O3)/(90 gram C3H6O3/mole C3H6O3) x (2 mole CH3OH/mole C3H6O3) x (30 gram CH3OH/mole CH3OH) = 0.71 gram CH3OH
Central Los Angeles meteorological data
Maximum modeled DMC concentration, ug/m3 from AERMOD output (receptor 384899.59, 3774958.56)
Maximum modeled sensitive receptor DMC concentration, ug/m3 from AERMOD output (receptor 384831.85, 3774797316)
Effective methanol concentration = Maximum modeled DMC concentration x 0.71

Table B-1
Mobile Emission Factors

EMFAC2007 Heavy-Duty Diesel Truck Emission Factors for the 2010 Fleet Year

CO lb/mile	NOx lb/mile	ROG lb/mile	SOx lb/mile	PM10 lb/mile	PM2.5 lb/mile	Diesel PM lb/mile
0.01195456	0.03822102	0.00304157	0.00004131	0.00183062	0.00160083	0.00168861

http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html

Locomotive Emission Factors for 2010

CO g/ton-mile	NOx g/ton-mile	VOC g/ton-mile	SOx g/ton-mile	PM10 g/ton-mile	PM2.5 g/ton-mile	DPM g/ton-mile
0.07	0.39	0.022	0.005	0.012	0.011	0.012

http://www.epa.gov/oms/regs/nonroad/locomotv/420f09025.pdf

Table B-2
Existing SCAQMD Emissions

Railcar Travel for Naphthenic Metal Working Fluid from Bakersfield to Keene

Naphthenic Metal Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Naphthenic Metal Working Fluid, ton/year	Railcars, year	District Distance, mile/day	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
152,090	20,000	7.79	592	8	25	0.29	1.69	0.09	0.02	0.05	0.05	0.05
				Annual	lb/yr	2.17	12.8	0.71	0.15	0.38	0.37	0.38

Assumed 10 percent of Naphthenic Metal Working fluid is transported by rail.
Assumed one rail car sent at a time.

Table B-2 (Continued)
Existing SCAQMD Emissions

Railcar Travel for Naphthenic Metal Working Fluid from Keene to Boron

Naphthenic Metal Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Naphthenic Metal Working Fluid, ton/year	Railcars, year	District Distance, mile/day	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
152,090	20,000	7.79	592	8	63	0.72	4.25	0.24	0.05	0.13	0.12	0.13
				Annual	lb/yr	5.48	32.3	1.80	0.39	0.97	0.94	0.97

Assumed 10 percent of Naphthenic Metal Working fluid is transported by rail.
Assumed one rail car sent at a time.

Railcar Travel for Naphthenic Metal Working Fluid from Boron to Barstow to Cajon

Naphthenic Metal Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Naphthenic Metal Working Fluid, ton/year	Railcars, year	District Distance, mile/day	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
152,090	20,000	7.79	592	8	93	1.06	6.27	0.35	0.08	0.19	0.18	0.19
				Annual	lb/yr	8.08	47.7	2.65	0.57	1.43	1.38	1.43

Assumed 10 percent of Naphthenic Metal Working fluid is transported by rail.
Assumed one rail car sent at a time.

Railcar Travel for Naphthenic Metal Working Fluid from Cajon to Los Angeles

Naphthenic Metal Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Naphthenic Metal Working Fluid, ton/year	Railcars, year	District Distance, mile/day	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
152,090	20,000	7.79	592	8	62	0.71	4.18	0.23	0.05	0.13	0.12	0.05
				Annual	lb/yr	5.39	31.8	1.77	0.38	0.95	0.92	0.38

Assumed 10 percent of Naphthenic Metal Working fluid is transported by rail.
Assumed one rail car sent at a time.

Table B-2 (Continued)
Existing SCAQMD Emissions

Diesel Truck Travel for Naphthenic Metal Working Fluid - Bakersfield to Labec

Naphthenic Metal Working Fluid, gal/year	Tanker Capacity, gal/car	Trucks, year	District Distance, mile/day	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
1,368,810	3,000	456	41	4.30	13.75	1.09	0.01	0.66	0.58	0.61
		Annual	lb/yr	224	715	57	0.8	34	30	32

Assumed 90 percent of Naphthenic Metal Working fluid is transported by diesel truck.
Assumed truck deliveries once a week.

Diesel Truck Travel for Naphthenic Metal Working Fluid - Labec to Los Angeles

Naphthenic Metal Working Fluid, gal/year	Tanker Capacity, gal/car	Trucks, year	District Distance, mile/day	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
1,368,810	3,000	456	72	7.50	23.98	1.91	0.03	1.15	1.00	1.06
		Annual	lb/yr	390	1,247	99	1.3	60	52	55

Assumed 90 percent of Naphthenic Metal Working fluid is transported by diesel truck.
Assumed truck deliveries once a week.

Existing Daily

Air District	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
SJVAB	4.6	15.4	1.2	0.0	0.7	0.6	0.7
KAB	0.72	4.25	0.24	0.05	0.13	0.12	0.13
MDAB	1.06	6.27	0.35	0.08	0.19	0.18	0.19
District	8.21	28.16	2.14	0.08	1.27	1.13	1.11

Table B-2 (Concluded)
Existing SCAQMD Emissions

Existing Annual

Air District	CO lb/yr	NOx lb/yr	VOC lb/yr	SOx lb/yr	PM10 lb/yr	PM2.5 lb/yr	DPM lb/yr
SJVAB	226	728	58	0.93	35	30	32
KAB	5.48	32.3	1.80	0.39	0.97	0.94	0.97
MDAB	8.08	47.7	2.65	0.57	1.43	1.38	1.43
District	395	1,279	101	1.73	60.7	53.1	55.5

Table B-3
Proposed Project Replacement Metal Working Fluids from Out of State

Fluid Type	Location	Percentage	Amount, gallons
Paraffinic Oil	Texas	21	319,389
Water-Dilutable Oil	Ohio	20	60,836
Vegetable Oil	Iowa	10	30,418
Total		51	410,643

Assumed all alternative naphthenic oil working fluid is transported by rail.
Water-dilutable oil and vegetable oil metal working fluid concentrate are maximum 20 percent of existing fluid.

Railcar Travel for Replacement Metal Working Fluid - Ehrenberg to East District Boundary

Paraffinic Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Paraffinic Working Fluid, ton/year	Railcars, year	District Distance, mile/day	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
410,643	20,000	7.08	1,454	21	56	0.58	3.43	0.19	0.04	0.10	0.10	0.10
				Annual	lb/yr	11.9	70	3.92	0.84	2.11	2.05	2.11

Table B-3 (Concluded)
Proposed Project Replacement Metal Working Fluids from Out of State

Railcar Travel for Water-dilutable Metal Working Fluid - East District Boundary to Los Angeles

Paraffinic Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Paraffinic Working Fluid, ton/year	Railcars, year	District Distance, mile/day	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
410,643	20,000	8.75	1,797	21	199	2.56	15.07	0.84	0.18	0.45	0.44	0.45
				Annual	lb/yr	52.5	309	17.22	3.70	9.26	8.98	9.26

Daily from Out of State

Air District	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
MDAB	0.58	3.43	0.19	0.04	0.10	0.10	0.10
District	2.56	15.07	0.84	0.18	0.45	0.44	0.45

Annual from Out of State

Air District	CO lb/yr	NOx lb/yr	VOC lb/yr	SOx lb/yr	PM10 lb/yr	PM2.5 lb/yr	DPM lb/yr	DPM lb/half mile/year
MDAB	11.9	70	3.92	0.84	2.11	2.05	2.11	0.02
District	52.5	309	17.2	3.70	9.3	9.0	9.3	0.02

Table B-4
Proposed Project Replacement Metal Working Fluids from Richmond, CA along the Union Pacific US-101 Route

Railcar Travel for Paraffinic Metal Working Fluid - Richmond to Aromas

Paraffinic Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Paraffinic Working Fluid, ton/year	Railcars, year	District Distance, mile/day	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
745,241	20,000	7.08	2,638	37	99	1.03	6.07	0.34	0.07	0.18	0.18	0.18
				Annual	lb/yr	38.3	226.0	12.58	2.71	6.77	6.56	6.77

Table B-4 (Continued)
Proposed Project Replacement Metal Working Fluids from Richmond, CA along the Union Pacific US-101 Route

Railcar Travel for Paraffinic Metal Working Fluid - Aromas to McKay

Paraffinic Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Paraffinic Working Fluid, ton/year	Railcars, year	District Distance, mile/day	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
745,241	20,000	8.75	3,260	37	102	1.31	7.72	0.43	0.09	0.23	0.22	0.23
				Annual	lb/yr	48.8	287.8	16.02	3.45	8.61	8.36	8.61

Railcar Travel for Paraffinic Metal Working Fluid - McKay to 101 and 166

Paraffinic Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Paraffinic Working Fluid, ton/year	Railcars, year	District Distance, mile/day	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
745,241	20,000	8.75	3,260	37	70	0.90	5.30	0.30	0.06	0.16	0.15	0.16
				Annual	lb/yr	33.5	197.5	10.99	2.36	5.91	5.73	5.91

Railcar Travel for Paraffinic Metal Working Fluid - 101 and 166 to 101 before 150

Paraffinic Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Paraffinic Working Fluid, ton/year	Railcars, year	District Distance, mile/day	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
745,241	20,000	8.75	3,260	37	79	1.01	5.98	0.33	0.07	0.18	0.17	0.18
				Annual	lb/yr	37.8	222.9	12.41	2.67	6.67	6.47	6.67

Railcar Travel for Paraffinic Metal Working Fluid - 101 and 166 to 101 before 150

Paraffinic Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Paraffinic Working Fluid, ton/year	Railcars, year	District Distance, mile/day	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
745,241	20,000	8.75	3,260	37	44	0.56	3.33	0.19	0.04	0.10	0.10	0.10
				Annual	lb/yr	21.1	124.1	6.91	1.49	3.72	3.60	3.72

Table B-4 (Concluded)
Proposed Project Replacement Metal Working Fluids from Richmond, CA along the Union Pacific US-101 Route

Railcar Travel for Paraffinic Metal Working Fluid - 101 before 150 to Los Angeles

Paraffinic Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Paraffinic Working Fluid, ton/year	Railcars, year	District Distance, mile/day	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
745,241	20,000	8.75	3,260	37	39	0.50	2.95	0.16	0.04	0.09	0.09	0.09
				Annual	lb/yr	18.7	110.0	6.13	1.32	3.29	3.20	3.29

Daily - UP US-101 Route

Air District	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
BAAQMD	1.03	6.07	0.34	0.07	0.18	0.18	0.18
MBUAPCD	1.31	7.72	0.43	0.09	0.23	0.22	0.23
SLOCAPCD	0.90	5.30	0.30	0.06	0.16	0.15	0.16
SBCAPCD	1.01	5.98	0.33	0.07	0.18	0.17	0.18
VACAPCD	0.56	3.33	0.19	0.04	0.10	0.10	0.10
District	0.50	2.95	0.16	0.04	0.09	0.09	0.09

Annual - UP US-101 Route

Air District	CO lb/yr	NOx lb/yr	VOC lb/yr	SOx lb/yr	PM10 lb/yr	PM2.5 lb/yr	DPM lb/yr	DPM lb/half mile/year
BAAQMD	38.3	226.0	12.58	2.71	6.77	6.56	6.77	0.03
MBUAPCD	48.8	287.8	16.02	3.45	8.61	8.36	8.61	0.04
SLOCAPCD	33.5	197.5	10.99	2.36	5.91	5.73	5.91	0.04
SBCAPCD	37.8	222.9	12.41	2.67	6.67	6.47	6.67	0.04
VACAPCD	21.1	124.1	6.91	1.49	3.72	3.60	3.72	0.04
District	18.66	110.0	6.13	1.32	3.29	3.20	3.29	0.04

Table B-5
Proposed Project Replacement Metal Working Fluids from Richmond, CA along the Burlington Northern Santa Fe SR-99/Union Pacific SR-99 Route

Railcar Travel for Paraffinic Metal Working Fluid - Richmond to Orwood

Paraffinic Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Paraffinic Working Fluid, ton/year	Railcars, year	District Distance, mile/day	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
745,241	20,000	7.08	2,638	37	54	0.56	3.31	0.18	0.04	0.10	0.10	0.10
				Annual	lb/yr	20.9	123.3	6.86	1.48	3.69	3.58	3.69

Railcar Travel for Paraffinic Metal Working Fluid - Orwood to Keene

Paraffinic Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Paraffinic Working Fluid, ton/year	Railcars, year	District Distance, mile/day	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
745,241	20,000	8.75	3,260	37	227	2.91	17.19	0.96	0.21	0.51	0.50	0.51
				Annual	lb/yr	108.6	640	35.7	7.67	19.2	18.6	19.2

Railcar Travel for Paraffinic Metal Working Fluid - Keen to Boron

Paraffinic Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Paraffinic Working Fluid, ton/year	Railcars, year	District Distance, mile/day	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
745,241	20,000	8.75	3,260	37	63	0.81	4.77	0.27	0.06	0.14	0.14	0.14
				Annual	lb/yr	30.1	178	9.9	2.13	5.3	5.2	5.3

Railcar Travel for Paraffinic Metal Working Fluid - Boron to Barstow to Cajon

Paraffinic Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Paraffinic Working Fluid, ton/year	Railcars, year	District Distance, mile/day	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
745,241	20,000	8.75	3,260	37	93	1.19	7.04	0.39	0.08	0.21	0.20	0.21
				Annual	lb/yr	44.5	262	14.6	3.14	7.9	7.6	7.9

Table B-5 (Concluded)
Proposed Project Replacement Metal Working Fluids from Richmond, CA along the Burlington Northern Santa Fe SR-99/Union Pacific SR-99 Route

Railcar Travel for Paraffinic Metal Working Fluid - Cajon to Los Angeles

Paraffinic Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Paraffinic Working Fluid, ton/year	Railcars, year	District Distance, mile/day	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
745,241	20,000	8.75	3,260	37	62	0.80	4.69	0.26	0.06	0.14	0.14	0.14
				Annual	lb/yr	29.7	175	9.7	2.09	5.2	5.1	5.2

Daily – BNSF/UP SR-99 Route

Air District	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
BAAQMD	0.56	3.31	0.18	0.04	0.10	0.10	0.10
SJVAPCD	2.91	17.19	0.96	0.21	0.51	0.50	0.51
KCAPCD	0.81	4.77	0.27	0.06	0.14	0.14	0.14
MDAQMD	1.19	7.04	0.39	0.08	0.21	0.20	0.21
District	0.80	4.69	0.26	0.06	0.14	0.14	0.14

Annual - BNSF/UP SR-99 Route

Air District	CO lb/yr	NOx lb/yr	VOC lb/yr	SOx lb/yr	PM10 lb/yr	PM2.5 lb/yr	DPM lb/yr	DPM lb/half mile/year
BAAQMD	20.9	123.3	6.86	1.48	3.69	3.58	3.69	0.03
SJVAPCD	108.6	640	35.7	7.67	19.2	18.6	19.2	0.04
KCAPCD	30.1	178	9.89	2.13	5.32	5.16	5.32	0.04
MDAQMD	44.5	262	14.61	3.14	7.85	7.62	7.85	0.04
District	29.7	175	9.74	2.09	5.24	5.08	5.24	0.04

Table B-6
Proposed Project Total Daily Emissions

BAAQMD	**CO lb/day**	**NOx lb/day**	**VOC lb/day**	**SOx lb/day**	**PM10 lb/day**	**PM2.5 lb/day**	**DPM lb/day**
Project	1.03	6.07	0.34	0.07	0.18	0.18	0.18

District	**CO lb/day**	**NOx lb/day**	**VOC lb/day**	**SOx lb/day**	**PM10 lb/day**	**PM2.5 lb/day**	**DPM lb/day**
Existing	8.21	28.2	2.14	0.076	1.27	1.13	1.11
Project	3.06	18.0	1.00	0.22	0.54	0.52	0.54
-	-5.15	-10.14	-1.14	0.14	-0.73	-0.60	-0.57

MBUAPCD	**CO lb/day**	**NOx lb/day**	**VOC lb/day**	**SOx lb/day**	**PM10 lb/day**	**PM2.5 lb/day**	**DPM lb/day**
Project	1.31	7.72	0.43	0.09	0.23	0.22	0.23

MDAQMD	**CO lb/day**	**NOx lb/day**	**VOC lb/day**	**SOx lb/day**	**PM10 lb/day**	**PM2.5 lb/day**	**DPM lb/day**
Existing	1.06	6.27	0.35	0.08	0.19	0.18	0.19
Project	0.58	3.4	0.19	0.04	0.10	0.10	0.10
	-0.48	-2.84	-0.16	-0.03	-0.08	-0.08	-0.08

SBCAPCD	**CO lb/day**	**NOx lb/day**	**VOC lb/day**	**SOx lb/day**	**PM10 lb/day**	**PM2.5 lb/day**	**DPM lb/day**
Project	1.01	5.98	0.33	0.07	0.18	0.17	0.18

SJVAPCD	**CO lb/day**	**NOx lb/day**	**VOC lb/day**	**SOx lb/day**	**PM10 lb/day**	**PM2.5 lb/day**	**DPM lb/day**
Existing	4.6	15	1.19	0.04	0.7	0.6	0.7

SLOCAPCD	**CO lb/day**	**NOx lb/day**	**VOC lb/day**	**SOx lb/day**	**PM10 lb/day**	**PM2.5 lb/day**	**DPM lb/day**
Project	0.90	5.30	0.30	0.06	0.16	0.15	0.16

Table B-6 (Concluded)
Proposed Project Total Daily Emissions – Union Pacific US-101

VACAPCD	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
Project	0.56	3.33	0.19	0.04	0.10	0.10	0.10

Table B-7
Proposed Project Total Daily Emissions – Burlington Northern Santa Fe SR-99/Union Pacific SR-99 Route

BAAQMD	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
Project	0.56	3.31	0.18	0.04	0.10	0.10	0.10

District	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
Existing	8.21	28.2	2.14	0.076	1.27	1.13	1.11
Project	3.35	19.8	1.10	0.24	0.59	0.57	0.59
-	-4.86	-8.40	-1.04	0.16	-0.68	-0.55	-0.52

KCAPCD	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
Existing	0.72	4.25	0.24	0.05	0.13	0.12	0.13
Project	0.81	4.77	0.27	0.06	0.14	0.14	0.14
-	-0.09	-0.52	-0.03	-0.01	-0.02	-0.02	-0.02

MDAQMD	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
Existing	1.06	6.27	0.35	0.08	0.19	0.18	0.19
Project	1.78	10.5	0.58	0.13	0.31	0.30	0.31
	0.71	4.20	0.23	0.05	0.13	0.12	0.13

Table B-7 (Concluded)
Proposed Project Total Daily Emissions – Burlington Northern Santa Fe SR-99/Union Pacific SR-99 Route

SJVAPCD	CO lb/day	NOx lb/day	VOC lb/day	SOx lb/day	PM10 lb/day	PM2.5 lb/day	DPM lb/day
Existing	4.6	15	1.19	0.04	0.7	0.6	0.7
Project	2.91	17.2	0.96	0.21	0.51	0.50	0.51
	-1.7	1.8	-0.23	0.17	-0.19	-0.13	-0.14

Table B-8
Proposed Project Total Annual Emissions – Union Pacific US-101

BAAQMD	CO ton/yr	NOx ton/yr	VOC ton/yr	SOx ton/yr	PM10 ton/yr	PM2.5 ton/yr	DPM ton/yr
Project	0.019	0.113	0.006	0.001	0.003	0.003	0.003

District	CO ton/yr	NOx ton/yr	VOC ton/yr	SOx ton/yr	PM10 ton/yr	PM2.5 ton/yr	DPM ton/yr
Existing	0.198	0.639	0.050	0.001	0.030	0.027	0.028
Project	0.036	0.210	0.012	0.003	0.006	0.006	0.006
	-0.162	-0.430	-0.039	0.002	-0.024	-0.020	-0.021

KCAPCD	CO ton/yr	NOx ton/yr	VOC ton/yr	SOx ton/yr	PM10 ton/yr	PM2.5 ton/yr	DPM ton/yr
Existing	0.003	0.016	0.001	0.0002	0.0005	0.0005	0.0005

MBUAPCD	CO ton/yr	NOx ton/yr	VOC ton/yr	SOx ton/yr	PM10 ton/yr	PM2.5 ton/yr	DPM ton/yr
Project	0.006	0.035	0.002	0.0004	0.0011	0.0010	0.0011

Table B-8 (Continued)
Proposed Project Total Annual Emissions – Union Pacific US-101

MDAB	CO ton/yr	NOx ton/yr	VOC ton/yr	SOx ton/yr	PM10 ton/yr	PM2.5 ton/yr	DPM ton/yr
Existing	0.004	0.024	0.001	0.000	0.001	0.001	0.001
Project	0.006	0.035	0.002	0.0004	0.0011	0.0010	0.0011
	0.002	0.011	0.001	0.000	0.000	0.000	0.000

SBCAPCD	CO ton/yr	NOx ton/yr	VOC ton/yr	SOx ton/yr	PM10 ton/yr	PM2.5 ton/yr	DPM ton/yr
Project	0.019	0.111	0.006	0.001	0.003	0.003	0.003

SJVAPCD	CO ton/yr	NOx ton/yr	VOC ton/yr	SOx ton/yr	PM10 ton/yr	PM2.5 ton/yr	DPM ton/yr
Existing	0.113	0.364	0.029	0.000	0.017	0.015	0.016

SLOCAPCD	CO ton/yr	NOx ton/yr	VOC ton/yr	SOx ton/yr	PM10 ton/yr	PM2.5 ton/yr	DPM ton/yr
Project	0.017	0.099	0.005	0.001	0.003	0.003	0.003

VACAPCD	CO ton/yr	NOx ton/yr	VOC ton/yr	SOx ton/yr	PM10 ton/yr	PM2.5 ton/yr	DPM ton/yr
Project	0.0105	0.0621	0.0035	0.0007	0.0019	0.0018	0.0019

Table B-9
Proposed Project Total Annual Emissions – Burlington Northern Santa Fe SR-99/Union Pacific SR-99 Route

BAAQMD	**CO ton/yr**	**NOx ton/yr**	**VOC ton/yr**	**SOx ton/yr**	**PM10 ton/yr**	**PM2.5 ton/yr**	**DPM ton/yr**
Project	0.007	0.041	0.002	0.000	0.001	0.001	0.001

District	**CO ton/yr**	**NOx ton/yr**	**VOC ton/yr**	**SOx ton/yr**	**PM10 ton/yr**	**PM2.5 ton/yr**	**DPM ton/yr**
Existing	0.198	0.639	0.050	0.001	0.030	0.027	0.028
Project	0.036	0.213	0.012	0.003	0.006	0.006	0.006
	-0.162	-0.426	-0.039	0.002	-0.024	-0.020	-0.021

KCAPCD	**CO ton/yr**	**NOx ton/yr**	**VOC ton/yr**	**SOx ton/yr**	**PM10 ton/yr**	**PM2.5 ton/yr**	**DPM ton/yr**
Existing	0.003	0.016	0.001	0.0002	0.0005	0.0005	0.0005
Project	0.010	0.059	0.003	0.001	0.002	0.002	0.002
	0.007	0.043	0.002	0.001	0.001	0.001	0.001

MDAQMD	**CO ton/yr**	**NOx ton/yr**	**VOC ton/yr**	**SOx ton/yr**	**PM10 ton/yr**	**PM2.5 ton/yr**	**DPM ton/yr**
Existing	0.004	0.024	0.001	0.000	0.001	0.001	0.001
Project	0.021	0.123	0.007	0.001	0.004	0.004	0.004
	0.017	0.099	0.006	0.001	0.003	0.003	0.003

SJVAPCD	**CO ton/yr**	**NOx ton/yr**	**VOC ton/yr**	**SOx ton/yr**	**PM10 ton/yr**	**PM2.5 ton/yr**	**DPM ton/yr**
Existing	0.113	0.364	0.029	0.000	0.017	0.015	0.016
Project	0.044	0.261	0.015	0.003	0.008	0.008	0.008
	-0.069	-0.103	-0.014	0.003	-0.010	-0.008	-0.008

Table B-10
GHG Emissions Factors

EMFAC2007 Heavy-Duty Diesel Truck Emission Factors for the 2010 Fleet Year

CO2 lb/mile	CH4 lb/mile	DPM lb/mile
4.21120578	0.00014201	0.00168861

http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html

Locomotive Emission Factors for 2010

CO2 g/ton-mile
25.5

http://www.epa.gov/oms/regs/nonroad/locomotv/420f09025.pdf

Table B-11
GHG Emissions

Railcar Travel for Naphthenic Metal Working Fluid - Bakersfield to Los Angeles

Naphthenic Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Naphthenic Working Fluid, ton/year	Railcars, year	Distance, mile/trip	Distance, mile/year	CO2 Mton/year
152,090	20,000	7.79	592	8	249	1,894	3.8

Railcar Travel for Paraffinic Metal Working Fluid - Richmond to Los Angeles

Paraffinic Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Paraffinic Working Fluid, ton/year	Railcars, year	Distance, mile/trip	Distance, mile/year	CO2 Mton/year
745,241	20,000	7.08	2,638	37	541	20,159	36.5

Table B-11 (Continued)
GHG Emissions

Railcar Travel for Paraffinic Metal Working Fluid - Houston, TX to Los Angeles

Paraffinic Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Paraffinic Working Fluid, ton/year	Railcars, year	Distance, mile/trip	Distance, mile/year	CO2 Mton/year
319,389	20,000	7.08	1,131	16	1,548	24,721	44.7

Railcar Travel for Water-dilutable Metal Working Fluid - Cleveland, OH to Los Angeles

Paraffinic Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Paraffinic Working Fluid, ton/year	Railcars, year	Distance, mile/trip	Distance, mile/year	CO2 Mton/year
60,836	20,000	8.75	266	3	2,347	7,139	16.0

Railcar Travel for Vegetable-based Metal Working Fluid, Des Moines, IA to Los Angeles

Paraffinic Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Paraffinic Working Fluid, ton/year	Railcars, year	Distance, mile/trip	Distance, mile/year	CO2 Mton/year
30,418	20,000	8.75	133	2	1,684	2,561	5.7

Diesel Truck Travel for Naphthenic Metal Working Fluid - Bakersfield to Los Angeles

Naphthenic Working Fluid, gal/year	Tanker Capacity, gal/car	Trucks, year	Distance, mile/trip	Distance, mile/year	CO2 Mton/year
1,368,810	3,000	456	113	51,559	98

Table B-12
Off-Site Health Risk from Triethanolamine

Triethanolamine

Current Solvent Usage, gal/year	Proposed Solvent Dilution Rate	Proposed Solvent Usage, gal/year	Density, lb/gal	Weight Fraction	Emissions, lb/year	Emissions, lb/hr	(X/Q), (ug/m3)/ (lb/hr)	AF 7-Hr	Conc., ug/m3	Conc., mg/m3
32,000	10:1	3,200	8.75	0.2	5,600	1.9	1,532	0.98	2,920	2.9

Usage, lb/hr = usage, lb/year/(260 day/year)/(8 hour/day)
HI = [usage, lb/hr x (X/Q)]/PEL, ug/m3
(X/Q) from Table 7 of the Risk Assessment Procedures for Rules 1401 and 212, volume source less than 25 meters away from a source with a height less than 20 ft

Conc., mg/m3	Cal/OSHA PEL, mg/m3	Less Than PEL
2.9	5	Yes

Table B-13
Off-Site Health Risk from Monoethanolamine

Monoethanolamine

Current Solvent Usage, gal/year	Proposed Solvent Dilution Rate	Proposed Solvent Usage, gal/year	Density, lb/gal	Weight Fraction	Emissions, lb/year	Emissions, lb/hr	(X/Q), (ug/m3)/ (lb/hr)	AF 7-Hr	Conc., ug/m3	Conc., mg/m3
32,000	10:1	3,200	8.75	0.05	1,400	0.5	1,532	0.98	730	0.7

Usage, lb/hr = usage, lb/year/(260 day/year)/(8 hour/day)
HI = [usage, lb/hr x (X/Q)]/PEL, ug/m3
(X/Q) from Table 7 of the Risk Assessment Procedures for Rules 1401 and 212, volume source less than 25 meters away from a source with a height less than 20 ft.

Conc., mg/m3	Cal/OSHA PEL, mg/m3	Less Than PEL
0.7	5	Yes

Table B-14
Existing Diesel Consumption

Railcar Travel for Naphthenic Metal Working Fluid - Bakersfield to Los Angeles

Naphthenic Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Railcar Capacity, ton/year	Railcars, year	Distance, mile/trip	Distance, mile/year	Fuel Efficiency, gal/ton-mile	Diesel Usage, gal/year
152,090	20,000	7.79	592	8	243	1,848	0.0025	2,737

Fuel efficiency from EMFAC2007 for 2010

Railcar Travel for Paraffinic Metal Working Fluid - Richmond to Los Angeles

Paraffinic Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Paraffinic Working Fluid, ton/year	Railcars, year	Distance, mile/trip	California Distance, mile/day	Fuel Efficiency, gal/ton-mile	Diesel Usage, gal/year
745,241	20,000	7.08	2,638	37	541	255	0.0025	1,682

Fuel efficiency from http://www.epa.gov/oms/regs/nonroad/locomotv/420f09025.pdf.

Railcar Travel for Paraffinic Metal Working Fluid - Houston, TX to Los Angeles

Paraffinic Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Paraffinic Working Fluid, ton/year	Railcars, year	Distance, mile/trip	California Distance, mile/day	Fuel Efficiency, gal/ton-mile	Diesel Usage, gal/year
319,389	20,000	7.08	1,131	16	1,548	255	0.0025	721

Railcar Travel for Water-dilutable Metal Working Fluid - Cleveland, OH to Los Angeles

Paraffinic Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Paraffinic Working Fluid, ton/year	Railcars, year	Distance, mile/trip	California Distance, mile/day	Fuel Efficiency, gal/ton-mile	Diesel Usage, gal/year
60,836	20,000	8.75	266	3	2,423	255	0.0025	170

Table B-14 (Continued)
Existing Diesel Consumption

Railcar Travel for Vegetable Oil-based Metal Working Fluid - Des Moines, IA to Los Angeles

Paraffinic Working Fluid, gal/year	Railcar Capacity, gal/car	Density, lb/gal	Paraffinic Working Fluid, ton/year	Railcars, year	Distance, mile/trip	California Distance, mile/day	Fuel Efficiency, gal/ton-mile	Diesel Usage, gal/year
30,418	20,000	8.75	133	2	1,872	255	0.0025	85

Diesel Truck Travel for Naphthenic Metal Working Fluid – Bakersfield to Los Angeles

Naphthenic Working Fluid, gal/year	Tanker Capacity, gal/car	Trucks, year	Distance, mile/trip	Distance, mile/year	Fuel Efficiency, mile/gallon	Diesel Usage, gal/year
1,368,810	3,000	456	112	51,102	5.28	9,678

Table B-15
Existing Working Fluid Hazardous Properties

Existing Working Fluid	Specific Gravity	Density, lb/gal	Vapor Pressure, kPa	Vapor Density	Flash Point °C	LFL	UFL	Auto-ignition Temperature °C	Health	Flammability	Reactivity	Note
Sierra Form Oil 176	0.84	6.98	-	<1	85	0.7	5	-	2	2	0	-
Husky Quenching Oil	0.864	7.21	-	-	175	-	-	-	-	-	-	-
Milacron MilPro 740 ACF	0.87	7.26	-	-	187.8	-	-	-	1	1	0	-
Shell Fenella CH 402	0.874	7.27	-	-	176.67	-	-	-	1	1	0	NFPA
Petro Canada Aludraw 850	0.8827	7.37	-	-	280	-	-	-	1	1	0	-
Shell Vitrea 68	0.89	7.40	-	-	196.11	-	-	-	0	1	0	NFPA
Milacron MilPro 810CF	0.9	7.51	-	-	123.9	-	-	-	1	1	0	-
Schaeffer 128	0.902	7.50	<0.01333224	-	-	-	-	-	1	1	0	-
Shell Fenella DS 1790	0.908	7.55	0.0005	> 1	220	1	10	320	0	1	0	NFPA
Champion 1700	0.94	7.82	0.001333	>1	120	-	-	-	1	1	0	NFPA

~~Table B-2 16~~
~~Alternative Working Fluid Hazardous Properties~~

~~Alternative Working Fluid~~	~~Specific Gravity~~	~~Density, lb/gal~~	~~Vapor Pressure, kPa~~	~~Vapor Density~~	~~Flash Point °C~~	~~LFL~~	~~UFL~~	~~Auto-Ignition Temperature °C~~	~~Health~~	~~Flammability~~	~~Reactivity~~
~~Sinclair Artic Fire Form Oil~~	~~0.79~~	~~6.57~~	~~< 5~~	~~5.3~~	~~76~~	~~-~~	~~-~~	~~-~~	~~1~~	~~1~~	~~0~~
~~Shell Vitrea 22~~	~~0.85~~	~~7.07~~	~~0.0005~~	~~> 1~~	~~204~~	~~1~~	~~10~~	~~320~~	~~0~~	~~1~~	~~0~~
~~Citgo Quenching 22~~	~~0.86~~	~~7.15~~	~~<0.01~~	~~>1~~	~~202~~	~~-~~	~~-~~	~~-~~	~~1~~	~~1~~	~~0~~
~~Milacron MilPro 830 CF~~	~~0.87~~	~~7.23~~	~~-~~	~~-~~	~~185~~	~~-~~	~~-~~	~~-~~	~~1~~	~~1~~	~~0~~
~~Milacron MilPro 850 CF~~	~~0.87~~	~~7.23~~	~~-~~	~~-~~	~~215.6~~	~~-~~	~~-~~	~~-~~	~~1~~	~~1~~	~~0~~
~~Milacron MilPro 835 CF~~	~~0.872~~	~~7.25~~	~~-~~	~~-~~	~~201.7~~	~~-~~	~~-~~	~~-~~	~~1~~	~~1~~	~~0~~
~~Milacron MilPro 860 CF~~	~~0.882~~	~~-~~	~~-~~	~~-~~	~~198.9~~	~~-~~	~~-~~	~~-~~	~~1~~	~~1~~	~~0~~
~~Texaco Cleartex CF~~	~~0.885~~	~~7.36~~	~~-~~	~~1~~	~~226~~	~~-~~	~~-~~	~~-~~	~~0~~	~~1~~	~~0~~
~~Texaco Sultex~~	~~0.889~~	~~7.39~~	~~-~~	~~1~~	~~202~~	~~-~~	~~-~~	~~-~~	~~0~~	~~1~~	~~0~~
~~Milacron MilPro 500~~	~~0.9~~	~~7.48~~	~~-~~	~~-~~	~~193.3~~	~~-~~	~~-~~	~~-~~	~~1~~	~~1~~	~~0~~
~~Milacron MilPro 6000~~	~~0.9~~	~~7.48~~	~~-~~	~~-~~	~~215.6~~	~~-~~	~~-~~	~~-~~	~~1~~	~~1~~	~~0~~
~~Milacron MilPro 8000~~	~~0.9~~	~~7.48~~	~~-~~	~~-~~	~~187.8~~	~~-~~	~~-~~	~~-~~	~~1~~	~~1~~	~~0~~
~~Accu-Lube 1000~~	~~0.92~~	~~7.65~~	~~0.133322~~	~~>1~~	~~175~~	~~-~~	~~-~~	~~-~~	~~0~~	~~1~~	~~0~~
~~Accu-Lube 2000~~	~~0.92~~	~~7.65~~	~~0.133322~~	~~>1~~	~~204~~	~~-~~	~~-~~	~~-~~	~~0~~	~~1~~	~~0~~
~~Citgo Clairo Oil 160~~	~~0.92~~	~~7.65~~	~~<0.001~~	~~>1~~	~~157~~	~~-~~	~~-~~	~~-~~	~~1~~	~~1~~	~~0~~
~~Accu-Lube 6100~~	~~0.93~~	~~7.73~~	~~0.133322~~	~~>1~~	~~204~~	~~-~~	~~-~~	~~-~~	~~0~~	~~1~~	~~0~~
~~CimFree VG 990M~~	~~1.03~~	~~8.56~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~1~~	~~0~~	~~0~~
~~Accu-Lube Synthetic~~	~~1.04~~	~~8.65~~	~~-~~	~~<1~~	~~100~~	~~-~~	~~-~~	~~-~~	~~1~~	~~0~~	~~1~~
~~Milacron Cimtap HD~~	~~1.089~~	~~9.05~~	~~-~~	~~-~~	~~204.4~~	~~-~~	~~-~~	~~-~~	~~1~~	~~1~~	~~0~~

APPENDIX C

COMMENT LETTER AND RESPONSE TO COMMENTS

James Koizumi

From: katy wolf [kwolf.irta@earthlink.net]
Sent: Friday, April 23, 2010 8:16 AM
To: James Koizumi
Subject: FW: TBAC Doc
Attachments: TBAC Doc.jpg

James

As we discussed on the phone, I hope you will include an analysis of the worker risk in the CEQA document for dimethyl carbonate. As you know, the Governing Board has indicated that they do care about the risk to workers. You could do it for both the developmental toxicity and cancer endpoints. Amy scanned in the procedure for calculating workplace risk that was used for tert-butyl acetate. I am attaching it. You could use the same method for calculating the risk for dimethyl carbonate. Note, however, that there was an OSHA PEL established for TBAC but there isn't one for DMC. You could assume that concentrations would be between 100 and 1000 ppm and see how it comes out. DMC is a fairly volatile solvent so it's concentration would probably be higher than 100. 1-1

I hope this is useful. Please call me at (818) 244-0300 if you would like more information or clarification.

Katy

Attachment
TBAC Doc.jpg

ARB's draft *Environmental Impact Assessment of Tertiary-Butyl Acetate* addresses workplace exposure, but does not attempt to estimate risk. Since the overwhelming bulk of toxic chemical exposure occurs in the workplace, a workplace risk assessment is essential in evaluating a potential exemption. HESIS has attempted to formulate such an assessment, based considerably on information in the ARB document. Since workplace Permissible Exposure Limits have usually been set at levels close to the exposure levels actually existing in industry, we based our assessment on the assumptions of working-lifetime exposure at the PEL level of 200 ppm (950,000 micrograms/m^3). This is not too dissimilar to the 112 ppm (532,000 micrograms/m^3) level calculated in the ARB document.

OEHHA's cancer unit risk number for TBAc is (4×10^{-7}) / (microgram/m^3). Multiplying this unit risk by the PEL exposure level of 950,000 micrograms/m^3 gives a lifetime cancer risk of 380,000/1,000,000, or 0.38.

ARB based its risk assessment on assumptions of inhaling 20 m^3/day, 365 days/year, for 70 years. For working lifetime exposure, we instead assumed 10 m^3/day, 250 days/year, for 40 years. Multiplying the risk of 0.38 times (10/20 x 250/365 x 40/70), we get a working lifetime cancer risk of 0.074, or 74,000/1,000,000.

Comment Letter 1
Institute for Research and Technical Assistance (IRTA)
Dated April 23, 2010

Response to Comment 1-1

The comment addresses a version of PAR 1144 that was released subsequent to the release of the Draft EA for public review, which did not include an exemption for dimethyl carbonate (DMC) used in computerized numerically controlled machines (CNC), and the final version of PAR 1144. The version of PAR 1144 that is addressed in the comment included the exemption for the use of DMC in CNC machines, but did not specify that the equipment needed to be existing at the time of the adoption of PAR 1144 and enclosed with exhaust air vented out of the building. The commenter expresses concern that on-site workers would be exposed to DMC concentrations, because of the CNC exemption.

The final version of PAR 1144 includes additional language that requires that "the equipment existed at the time of rule adoption, is enclosed and an exhaust fan discharges the exhaust air from the equipment out of the building." The additional language addresses the commenter's concern by capturing the DMC emissions from the CNC machine, preventing any worker exposure to DMC emissions.

SCAQMD has identified only one facility that uses DMC as a cooling solvent in a CNC machine where permeable media are used to maintain a vacuum that holds the part in place during cutting. The existing CNC machine is enclosed, but would need an exhaust fan to discharge the exhaust air from the equipment out of the building. Off-site receptors would be exposed to DMC emissions, since captures DMC emissions from the CNC equipment are vented outside the building. A health risk analysis was prepared based on 327 gallons of DMC used per year (based on current denatured alcohol usage), parameters proposed for the future vent, facility parameters and meteorology). Detailed calculations are included in Appendix B of the Final EA.

OEHHA has established interim acute and chronic reference exposure level (REL) values of 18,000 and 5,500 micrograms per cubic meter respectively for DMC.[1] EPA has developed a pre-external peer review unit risk factor of 1E-6 cubic meters per microgram for methanol.[2]

Based on the facility-specific information, the maximum chronic hazard indices would be 0.0069 for the worker receptor and 0.0006 for sensitive receptor. The maximum acute hazard indices would be 0.16 for the worker receptor and 0.03 for sensitive receptor. The non-carcinogenic acute and chronic hazard indices for worker and sensitive receptors were each less than the significance threshold of 1.0. The carcinogenic health risk based on the maximum methanol concentration modeled at a worker receptor was estimated to be 3.3 in one million, which is less than the significance threshold of 10 in one million. The carcinogenic health risk based on the maximum methanol concentration modeled at a sensitive receptor was estimated to be 2.1 in one million, which is less than the significance threshold of 10 in one million. The health risk from

[1] OEHHA, Revised Assessment of Health Effects of Exposure to Dimethyl Carbonate, a Chemical Petitioned for Exemption from VOC Rules, memo from Richard Corey to Melanie Marty, Ph.D., December 8, 2009.
[2] EPA, Toxicological Review of Methanol (CAS No. 67-56-1) In Support of Summary Information on the Integrated Risk Information System (IRIS), December 2009. EPA/635/R-09.

DMC would be the only health risk from the proposed project, because no other health effects were identified from PAR 1144. Since all health risk from DMC would be less than significant, PAR 1144 is not expected to generate significant for health risk.

Since the adverse impacts from the proposed project would remain not significant, no new or additional mitigation would be required. Therefore, the proposed changes to PAR 1144 are not considered a "substantial revision" under CEQA Guidelines §15073.5 (b) and would not require recirculation under CEQA Guidelines §15073.5 (a).