



Maricopa County

Air Quality Department

AIR QUALITY DEPARTMENT
1001 North Central Avenue
Phoenix, AZ 85004

Intel Corporation
ATTN: Craig McCurry
4500 South Dobson Road, MS: OC4-005
Chandler, AZ 85248

This Permit is issued in accordance with Maricopa County Air Quality Department (MCAQD) Regulations, Rule 200, §303, and Arizona Revised Statutes, §49-404c and §49-480. The attached Permit Conditions are incorporated into and form an integral part of this Permit.

If the MCAQD Control Officer determines that additional monitoring, sampling, modeling and/or control of emissions from the facility may reasonably be needed to provide for the continued protection of public health, safety and/or welfare, the MCAQD Control Officer will amend the provisions of this Permit.

This Permit may be subject to suspension or revocation for cause including nonpayment of fees, noncompliance with Arizona State Statutes, Maricopa County Air Quality Regulations, or the attached Permit Conditions, or if the MCAQD Control Officer determines that significant misrepresentation exists in the application and supporting documentation filed to obtain or modify this Permit.

If you need assistance with the permit, please contact the Small Business Assistance/Ombudsman office at 602.506.5102 or contact the undersigned at 602.506.7248. Email communications may be sent to AQPermits@mail.maricopa.gov.

MARICOPA COUNTY AIR QUALITY DEPARTMENT

Engineering and Permitting Division

1001 N. Central Avenue, Suite 400, Phoenix, Arizona 85004

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AIR QUALITY PERMIT TO OPERATE AND/OR CONSTRUCT

(As required by Title 49, Chapter 3, Article 2, Section 49-480, Arizona Revised Statutes)

ISSUED TO

**Intel Corporation
4500 South Dobson Road
Chandler, AZ 85248**

This air quality permit to operate and/or construct does not relieve the applicant of the responsibility of meeting all air pollution regulations.

THE PERMITTEE IS SUBJECT TO THE SPECIFIC AND GENERAL CONDITIONS IDENTIFIED IN THIS PERMIT.

PERMIT NUMBER: 140059

REVISION DATE: 06/03/2015

REVISION NUMBER: 0.0.0.0

EXPIRATION DATE: 06/30/2020



Todd Martin, Non-Title V Permit Supervisor

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Any cited regulatory paragraphs or section numbers refer to the version of the rules and regulations that were in effect on the first date of public notice of the applicable Permit Condition unless specified otherwise. However, in the event the rules and regulations are amended during the term of this Permit, the amended rules and regulations shall apply to this Permit. Whenever the term, Control Officer, is used in this Permit it shall be interpreted to mean, Control Officer or designated representative. Where the term "Rule" appears, it shall be construed to mean "Maricopa County Air Pollution Control Regulations" unless otherwise noted.

SPECIFIC CONDITIONS

1. Allowable Emission Limitations:

The Permittee shall not allow emissions into the atmosphere to exceed any of the following limits:

- a. Fab 12, Fab 32S, Fab 32, Fab 42.1 and Trimix(TRMX) systems:

Pollutant	12-Month Rolling Total ¹
Total Volatile Organic Compounds (VOCs)	90 tons
Oxides of Nitrogen (NO _x)	90 tons
Carbon Monoxide (CO)	90 tons
Particulate of 10 Microns or Smaller (PM ₁₀)	47 tons
Particulate of 2.5 Microns of Smaller (PM _{2.5})	47 tons
Oxides of Sulfur (SO _x)	23 tons
Total Hazardous Air Pollutants (HAPs)	22 tons
Any Single HAP	9 tons

[County Rule 220 §302.2]

2. Emissions Calculations:

Compliance with the emission limits of Permit Condition 1 shall be demonstrated using the methodology outlined below and using emission factors (EFs) specific to this Permit that have been submitted in writing to the Control Officer or with the Permit Application. For process emissions not outlined below, the Permittee shall use the methodology most similar to the methodology submitted in the permit application.

[County Rule 220 §302.5]

- a. Emergency Engine Emissions:

- i. Emissions from emergency engines shall be calculated using EFs from EPA AP-42 Chapters 3.3 and 3.4: Emission Factors for Diesel Engines or the manufacturer specification sheet using the following equation:

$$E_i = R \times U \times F_i$$

Where,

E_i = Emission of Species i, lb/yr

R = Horsepower Rating of Engine

U = Usage of Engine, hours/year

F_i = Emission Factor for Species i, lb/hp-hr

- b. Natural Gas Combustion Emissions:

- i. Emissions from fuel burning equipment equipped with a dedicated natural gas meter shall be calculated using actual or sample performance testing data as outlined in Permit Condition 49. In cases where performance test data is unavailable, the Permittee shall use EFs from either the unit specific manufacturer's specification sheets or EPA AP-42 Chapter 1.4: Natural Gas Combustion.
- ii. Emissions from the TRMX system shall be calculated using performance testing data. In cases where performance test data is unavailable, the Permittee shall use a default factor of 0.57 lbs of NO_x/hr.
- iii. NO_x and CO emissions from the RCTOs shall be determined through performance testing as outlined in Permit Condition 48.

- iv. Emissions from any remaining natural gas combustion shall be calculated based on appropriate EFs from EPA AP-42 Chapter 1.4: Natural Gas Combustion, including HAP emissions.
- c. Semiconductor Mfg HAPs: HAP emissions shall be determined through one of the following calculation methods: Performance Testing or EFs. Once a calculation method has been utilized to demonstrate compliance, the selected calculation method(s) may only be changed through a revision to the permit. The Permittee has the ability to re-test at any time and utilize that latest stack test data in emission calculations so long as proper testing protocols are followed

i. Performance Testing:

$$\text{Monthly HAP Emissions} = (\text{TR HAPs}) \times \text{PI} + (\text{EF HAP}) + (\text{RCTO HAPs}) + (\text{FUG HAPs})$$

Where:

- 1) TR (Test Result) HAPs: Emissions of Cl₂, HCl, and HF shall be determined through stack testing at the outlet of each Fab scrubber using the test methods outlined in Permit Condition 48. HAPs that are intermittently detected during the testing will be assumed to be present at levels of ½ Field Detection Limit (FDL) during the periods where they are below the detection limit.
- 2) PI (Production Index): Performance TRs shall be adjusted monthly to account for changes in the manufacturing levels using the PI (outlined below).

$$\text{Monthly PI} = \frac{(\text{Average Wafer Outs for the month})}{(\text{Average Wafer Outs during the test period})}$$

Test wafer scaling shall be listed in the test protocol for review.

- 3) EF HAP: For HAPs other than Cl₂, HCl, and HF the Permittee shall utilize compound specific EFs based on internal Intel testing of process tools and control equipment, submitted to MCAQD annually, as part of the first Quarterly Emission Report of the calendar year required by Permit Condition 47.a. These EFs will be applied to the total quantity of each compound used in order to calculate emissions.
- 4) RCTO HAPs: HAPs that are VOCs exhausted by RCTOs shall either be tested via the FTIR method or calculated by using mass balance, engineering calculation, or EFs submitted to MCAQD annually, as part of the first Quarterly Emission Report of the calendar year required by Permit Condition 47.a.
- 5) FUG HAPs: Fugitive HAPs not tested will be calculated by using mass balance, engineering calculation, or EFs submitted to MCAQD annually, as part of the first Quarterly Emission Report of the calendar year required by Permit Condition 47.a.

ii. Emission Factors:

Alternatively, the Permittee may utilize compound specific EFs based on internal Intel testing of process tools and control equipment, as submitted to MCAQD through a permit modification. These EFs will be applied to the total quantity of each compound used to calculate emissions.

- d. Semiconductor Mfg VOCs: VOC emissions shall be determined through one of the following calculation methods: Performance Testing or EFs. Performance testing calculation methodologies shall be used to demonstrate compliance as soon as the Permittee has completed at one full year of testing required under Permit Condition 48 (Four total performance tests). In 2015 when the Permittee transitions to using the performance testing method described in (i), any change in calculation methodology may only be approved through a revision to the permit. The Permittee may re-test at any time and utilize the latest stack test data in emission calculations so long as proper testing protocols are followed.

i. Performance Testing:

$$\text{Monthly VOC Emissions} = (\text{TR VOCs}) \times \text{PI} + (\text{Scr VOC}) + (\text{HAP VOCs}) + (\text{FUG VOCs})$$

Where:

- 1) TR VOCs: RCTO emissions of VOCs shall be determined through stack testing per Permit Condition 48.b. The total hydrocarbon results, measured as either propane or methane, will be converted to actual mass of VOCs using a conversion factor based on the average molecular weight of compounds exhausted to the VOC abatement system. The Permittee may perform additional monitoring via FTIR or a methane/non-methane hydrocarbon analyzer to quantify the methane portion of the total hydrocarbons and subtract this portion.
- 2) PI: Performance TRs shall be adjusted monthly to account for changes in the manufacturing levels using the PI.

$$\text{Monthly PI} = \frac{(\text{Average Wafer Outs for the month})}{(\text{Average Wafer Outs during the test period})}$$

Test wafer scaling shall be listed in the test protocol for review.

- 3) Scr VOC: The Permittee shall quantify emissions of VOCs in the Fab scrubbed exhaust stacks using FTIR per Permit Condition 48.p.iv. Any VOCs detected will be quantified and added to the site-wide total VOC emissions. The Permittee may perform additional monitoring via FTIR or a methane/non-methane hydrocarbon analyzer to quantify the methane portion of the total hydrocarbons and subtract this portion.
- 4) HAPs that are VOCs will be calculated as described in Permit Condition 2.d.i.1) above.
- 5) FUG VOCs: Fugitive VOCs will be calculated by using mass balance or engineering calculation submitted to MCAQD annually, as part of the first Quarterly Emission Report of the calendar year required by Permit Condition 47.a.;
 - a) Upon written approval from MCAQD, the Permittee may take credit for VOC emission reductions achieved through “bagging” of solvent wipes. Prior to taking this emission reduction credit, the Permittee shall develop and submit for the approval to MCAQD, a testing plan that includes the methodology to be used to determine VOCs reduced through bagging. The testing plan shall include at a minimum:
 - i) A description of the method used to measure VOC content in the bagged wipes.
 - ii) The means for discerning VOC weight from the weight of the bags and cloth wipes.
 - iii) The estimated number of bags that will be tested.

Following completion of the study, the Permittee shall submit the results, including all raw data, to MCAQD for review.

MCAQD will make a final determination within 5 business days of receipt of the study results as to the VOC emission reduction credit that may be taken.

ii. Emission Factors:

Alternatively, the Permittee may utilize compound specific EFs based on internal Intel testing of process tools and control equipment, as submitted to MCAQD through a permit modification. These EFs will be applied to the total quantity of each compound used to calculate emissions.

e. PM₁₀ Emissions from Cooling Towers:

- i. Monthly emissions shall be calculated using the following equation:

$$\text{PM}_{10} \left(\frac{\text{lb}}{\text{hr}} \right) = \text{Tower Capacity (gpm)} \times \text{TDS (ppm)} \times \left(8.34 \frac{\text{lb}}{\text{gal}} \right) \times (\text{Drift \%}) \times \left(60 \frac{\text{min}}{\text{hr}} \right) \times \left(0.315 \frac{\text{PM}_{10}}{\text{PM}} \right) \times (10^{-6} \text{ ppm})$$

$$\text{TDS (ppm)} = \text{Conductivity} \times 0.67$$

- ii. In lieu of tracking the actual monthly flow rate (Tower Capacity) of water for each set of cooling towers, the Permittee may estimate the monthly flow rate based on the monthly operating time and maximum capacity in gallons per minute (gpm) of each set of towers. $PM_{2.5}$ shall be assumed equal to PM_{10} .

[County Rule 200 §310.2][County Rule 220 §302.6]

SEMICONDUCTOR MANUFACTURING

3. Solvent Cleaning Stations:

The Permittee shall operate solvent cleaning stations which contain more than 10% VOC content, in accordance with all of the following requirements:

- a. Each heated or unheated reservoir, sink, and container that transfers, stores, or holds VOC-containing material shall be provided with a full cover. A cover shall remain closed except while production, sampling, maintenance, or loading or unloading procedures require operator access.
[County Rule 338 §302.1(a)] [SIP Rule 338 §305]
- b. All reservoirs and sinks using VOC containing materials with a vapor pressure greater than 33 mm Hg at 20°C (68°F) shall have a freeboard ratio greater than or equal to 1.0.
[County Rule 338 §302.1(b)]
- c. Cleaning solvents shall be applied in a continuous unbroken stream in a manner to prevent splashing.
[County Rule 338 §302.1(c)]
- d. VOC containing solvents used to clean semiconductor equipment shall meet at least one of the following requirements:
 - i. The VOC content of the solvent shall not exceed 200 g/l (1.7 lbs/gal); or
 - ii. The VOC composite partial pressure shall not exceed 33 mm Hg at 20°C (68°F); or
 - iii. The components being cleaned are totally enclosed during washing, rinsing, and draining such that no greater than 50 ppm (220 mg/m₃) of VOC emissions are detected using the method as defined in Rule 338 §503.5.
[County Rule 338 §302.2]
- e. Alternative Compliance for Solvent Processes: As an alternative, the Permittee may demonstrate compliance with the requirements of Permit Conditions 4.a- 4.d by implementing at least one of the following:
 - i. Utilize an ECS that achieves an overall control efficiency as required by this permit as verified through the performance testing requirements of Permit Condition 48; or
 - ii. Utilize an Air-tight or Airless system that is both sealed during cleaning and drying and has a sealed, self-contained liquid-solvent recovery system; or
 - iii. Utilize only those materials in the operation that contain less than 100 g VOC/liter or no more than 10% VOC by weight.
[County Rule 338 §302.3] [SIP Rule 338 §305]

4. Solvent Storage and Disposal:

The Permittee shall comply with all of the following:

- a. The Permittee shall not store, discard, or dispose of VOCs or materials containing VOCs in a way intended to cause or to allow the evaporation of VOCs to the atmosphere. All materials from which VOCs can evaporate, including fresh solvent, waste solvent and residues, shall be stored in closed containers when not in use;
- b. Such containers shall be legibly labeled with their contents;
- c. All containers containing VOCs shall be leak free and shall be kept closed except when the materials

are being transferred or when the containers are being cleaned;

- d. Disposal of waste or surplus VOC-containing materials shall be done in a manner that does not promote VOC evaporation, such as, but not limited to, via sewage treatment works in accordance with the site's Industrial User Permit or having the waste hauled off-site in sealed containers or tank trucks.

[County Rule 338 §305] [SIP Rule 338 §305]

5. Other Solvent Cleaning Requirements:

The Permittee shall comply with the requirements of Permit Conditions 9 - 17 for solvent cleaning of equipment or parts that are performed for purposes other than semiconductor manufacturing processes.

[Rule 331]

6. Semiconductor Systems:

- a. The BSSW treatment system shall not be operated unless the exhaust generated during treatment operations is vented through a Thermal Oxidizer (TO). See Permit Condition 8 for maintenance requirements applicable to this TO.

- i. The TO shall meet the specifications listed in Permit Condition 8.a. as agreed upon for meeting Best Available Control Technology (BACT).

[County Rule 220 §302.2][County Rule 241 §301]

7. Control Requirements:

- a. Rotor-Concentrator/Thermal Oxidizers (RCTOs)

The Permittee shall exhaust all process VOC emissions from semiconductor manufacturing operations to an RCTO at all times during operation. The RCTOs shall be fully functional and be operated in accordance with the most recently submitted O&M Plan at all times they are receiving exhaust.

- i. All RCTOs, as well as those approved for future and/or future operation shall be operated to control process VOC emissions from semiconductor manufacturing. The RCTO's shall achieve an overall VOC control efficiency as follows:

- 1) Achieve at least 98.5% VOC control when the inlet VOC concentration >2000 ppmv measured as methane; or
- 2) Achieve at least 97% VOC control when the inlet VOC concentration >200 to ≤2000 ppmv measured as methane; or
- 3) Achieve at least 90% VOC control when the inlet VOC concentration ≤200 ppmv measured as methane; or
- 4) An outlet concentration of less than or equal to 10 ppmv measured as methane.

- ii. All VOC abatement control devices, as applicable, shall be operated at the same or higher combustion chamber set-point temperature used to demonstrate compliance during the Performance Test.

Compliance with the efficiency requirements of this condition shall be demonstrated in accordance with the testing requirements of Permit Condition 48. Fugitive emissions are not process emissions. Fugitive emissions are defined as those emissions which could not reasonably pass through a stack chimney, vent, or other functionally-equivalent opening.

[County Rule 241 §301] [County Rule 220 §302.2]

- b. The Permittee shall vent HAP emissions from etch, chemical vapor deposition, and wet bench processes to a wet scrubber at all times during operation excluding 2-hour downtime per scrubber per 12-consecutive month period as detailed in the most recent approved O&M plan. The scrubbers shall be fully functional and be operated in accordance with the most recently submitted O&M Plan at all times they are receiving exhaust. Inorganic HAP emissions from the manufacturing operations shall be vented to the scrubbers unless the Permittee demonstrates to the satisfaction of the Control Officer that connecting the source to the control would result in dilution of the stream to the extent that overall HAP

emissions would not be reduced.

Each scrubber system shall have a removal efficiency of at least 90% by weight for HCl or an outlet concentration of 1 ppmv or less.

[County Rule 241 §301][County Rule 220 §302.2]

- c. New semiconductor manufacturing equipment which has emissions of VOCs or Organic HAPs shall be vented to appropriate control devices in order to meet BACT unless the Permittee demonstrates to the satisfaction of the Control Officer that connecting the source to the control device would result in dilution of the stream to the extent that overall emissions would not be reduced.

[County Rule 241 §301] [County Rule 220 §302.2]

- d. For each piece of equipment for which the Permittee is assuming 100% Capture of VOC, the Permittee shall demonstrate that the ventilation/draft rates of such equipment meets the following requirements:

Capture efficiency of an emission control device used to meet the requirements this section shall be determined by mass balance in combination with ventilation/draft rate determinations done in accordance with EPA Methods 2, 2A, 2C, or 2D (ventilation/draft rates), or US EPA Test Methods 204, 204a, 204b, 204c, 204d, 204e, and 204f, Appendix M, 40 CFR §51.

Verification that all active hoods and ducts, when measured at any selection of any interior place within them, are at negative pressure relative to adjacent, uncaptured air shall suffice for routine and uncontested demonstration of capture adequacy and this permit condition. Compliance with this condition shall be verified with the recordkeeping requirements as outlined in Permit Condition 46.j.

[County Rule 338 §503.3]

8. Operations and Maintenance Plans (O&M Plans):

- a. The Permittee shall submit an O&M Plan(s) for the following devices to MCAQD at 1001 N. Central Ave., Phoenix, AZ 85004, Attn: Permitting Manager:
- i. Wet Fume Scrubbers;
 - ii. Thermal Oxidizers including BSSW Thermal Oxidizer; and
 - iii. Rotary Concentrator Thermal Oxidizers (RCTOs)
- b. Each O&M Plan shall be prepared in accordance with the MCAQD's guidelines and shall be submitted to MCAQD within 45 days after the issuance of the permit unless the O&M Plan was submitted and approved within 24 months prior to this date. The Permittee shall revise the O&M Plan upon the request of MCAQD and whenever substantive changes are made to the equipment or plan, in accordance with MCAQD guidelines.
- c. The Permittee shall submit an O&M Plan, or a revision to an existing plan, for any additional wet scrubber, TOs or RCTOs which are installed during the term of this Permit within 45 days of the equipment being brought online or within 45 days after the new scrubber or oxidizer has achieved the capability to operate at its maximum production rate on a sustained basis, whichever occurs last.
- d. Each O&M Plan shall include requirements for training employees who are responsible for operating or maintaining the emission control devices and the associated monitoring equipment, as necessary.
- e. As part of the O&M Plan, the Permittee shall establish appropriate ranges for the key operating parameters for each control device. The Permittee shall monitor, operate and maintain the equipment in accordance with the device's approved O&M Plan.
- i. At a minimum the plan shall include:
 - 1) Wet Fume Scrubbers: Media Static Pressure Differential and water recirculation flow rate
 - 2) RCTOs and BSSW Thermal Oxidizer: Oxidizer Combustion Temperatures
- f. The Permittee shall monitor, operate and maintain control devices in accordance with the approved O&M plan and this Permit. If any control device is found to be operating outside a specified range, the

Permittee shall take corrective action as specified in the approved O&M plan or shut down the device and the equipment vented to it.

- g. If a pattern of excursions, as determined by MCAQD or the Permittee, of operation outside the specified operating range develops, the Permittee shall submit for Department approval a Corrective Action Plan to bring the devices back into the specified operating range. The Plan shall be submitted to MCAQD, Attn: Air Quality Compliance Section, within 30 days of the determination of the existence of a pattern of operation outside the specified operating range.
- h. In order to take abatement credit for POU Exhaust Conditioners Units, the Permittee shall follow the procedures outlined in the MCAQD guidance document "Optional Compliance Demonstrations, A Guideline for Semiconductor Industry, Part II, Procedure to Determine Requirement for Operation and Maintenance Plan Point of Use/Exhaust Conditioner Units," dated June 4, 2001.

[County Rule 220 §302.4]

NON-VAPOR SOLVENT CLEANING MACHINES

9. Operational Limitations:

The Permittee shall not use Vapor Cleaning Machines for any operations on-site.

[County Rule 220 §302.2] [County Rule 331 §Appendix]

10. Definitions

For the Purpose of this Permit Section, the following definitions apply:

- a. *Cleaning Solvent*: Solvent used for cleaning that contains more than 2.0% VOC by weight and more than 20 grams of VOC per liter.
- b. *Conforming Solvent*: A cleaning solvent having a total VOC vapor pressure at 68°F (20°C) not exceeding 1 millimeter of mercury column.
- c. *Low VOC Cleaner*: Any solution or homogeneous suspension that, as used, contains less than 50 grams of VOC per liter of material (0.42 lb VOC/gal) or is at least 95% water by weight or volume.
- d. *Sealed System*: An air-tight or airless cleaning system which is operated according to the manufacturer's specifications and, unless otherwise indicated by the manufacturer, meets all of the following requirements:
 - i. Has a door or other pressure-sealing apparatus that is shut during each cleaning and drying cycle; and
 - ii. Has a differential pressure gauge that always indicates the pressure in the sealed chamber when occupied or in active use; and
 - iii. Any associated pressure relief device(s) shall be so designed and operated as to prevent liquid cleaning-solvents from draining out.
- e. *Small Cleaner*: Any degreaser or dip tank having a liquid surface area of one square foot or less or having a maximum capacity of one gallon or less.
- f. *Solvent Cleaning Machine (Cleaning Machine) (Degreaser)*: Any liquid container and ancillary equipment designed to clean surfaces and/or remove surface contaminants using cleaning-solvents

[SIP Rule 331 §§§200, 304.3, 308.2(b)]

11. Solvent Handling Requirements:

The Permittee shall comply with all of the following:

- a. All cleaning solvent, including solvent soaked materials, shall be kept in closed, leak free, impervious containers that are opened only when adding or removing material.
 - i. Porous or absorbent materials used for wipe cleaning shall be stored in closed containers when not in use.

- ii. Each container shall be clearly labeled with its contents.
- b. If any cleaning solvent escapes from a container:
 - i. Wipe up or otherwise remove immediately if in accessible areas.
 - ii. For areas where access is not feasible during normal production, remove as soon as reasonably possible.
- c. Unless records show that VOC-containing cleaning material was sent offsite for legal disposal or if “bagging” of solvent wipes has not been approved under Permit Condition 4.d.i.5, it will be assumed that it evaporated on site.

[SIP Rule 331 §301]

12. Equipment Requirements:

The Permittee shall comply with all of the following:

- a. Provide a leak-free, impervious container (degreaser) for the solvents and the articles being cleaned.
 - i. The VOC-containment portion shall be impervious to VOC-containing liquid and vapors.
 - ii. No surface of any freeboard required by this Permit shall have an opening or duct through which VOC can escape to the atmosphere, except as controlled by an ECS, or as required by OSHA.
- b. Properly maintain and operate all cleaning machine equipment required by this permit.

[SIP Rule 331 §302]

13. Specific Operating and Signage Requirements for Cleaning Machines:

The Permittee, when using cleaning solvent, other than a low VOC cleaner, shall comply with the following requirements:

- a. Operating Requirements:
 - i. Fans: Do not locate nor position comfort fans in such a way as to direct airflow across the opening of any cleaning machine.
 - ii. Cover: Do not remove any device designed to cover the solvent unless processing work in the cleaning machine or maintaining the machine.
 - iii. Draining: Drain cleaned parts for at least 15 seconds after cleaning or until dripping ceases, whichever is later.
 - iv. Spraying: If using a cleaning solvent spray system, unless otherwise authorized in Permit Condition 17, the Permittee shall:
 - 1) Use only a continuous, undivided stream (not a fine, atomized, or shower type spray).
 - 2) Pressure at the orifice from which the solvent emerges shall not exceed 10 psig and shall not cause liquid solvent to splash outside of the solvent container.
 - 3) In an in-line cleaning machine, a shower-type spray is allowed, provided that the spraying is conducted in a totally confined space that is separated from the environment.
 - v. Agitation: No person shall cause agitation of a cleaning solvent in a cleaning machine by sparging with air or other gas. Covers shall be placed over ultrasonic cleaners when the cleaning cycle exceeds 15 seconds.
 - vi. No Porous Material:
 - 1) The Permittee shall not clean nor use porous or absorbent materials to clean parts or products in a cleaning machine. Porous or absorbent materials include, but are not limited to, cloth, leather, wood, and rope.
 - 2) The Permittee shall not place an object with a sealed wood handle, including a brush, in or on a cleaning machine.

- 3) The Permittee shall not place porous or absorbent materials, including, but not limited to, cloth, leather, wood, and rope on a cleaning machine.
- vii. Vent Rates: The ventilation rate at the cleaning machine shall not exceed 65 cfm per square foot of evaporative surface ($20 \text{ m}^3/\text{min}/\text{m}^2$), unless that rate must be changed to meet a standard specified and certified by a Certified Safety Professional, a Certified Industrial Hygienist, or a licensed professional engineer experienced in ventilation, to meet health and safety requirements.
- viii. Hoist Speed: Limit the vertical speed of mechanical hoists moving parts in and out of the cleaning machine to a maximum of 2.2 inches per second and 11 ft/min (3.3 m/min).
- ix. Contamination Prevention: Prevent cross contamination of conforming solvents with non-conforming solvents. Use signs, separated work-areas, or other effective means for this purpose.
- x. Filtration Devices: If a filtration device is inherent in the design of the cleaning machine, then such filtration device shall be operated in accordance with manufacturer's specifications and in accordance with the following requirements:
 - 1) The filtration device shall be fully submerged in cleaning solvent at all times during filtration.
 - 2) When the filtration device is completely saturated and must be removed from the cleaning machine, the filtration device shall be drained until no liquid can flow from the filtration device. Draining and drying such filtration device shall be conducted in a sealed container with no exhaust to the atmosphere or work area.
 - 3) After the filtration device is dry, the filtration device shall be stored in a closed, leak free, impervious container that is legibly labeled with its contents and that remains covered when not in use. Disposal of the filtration device shall be done in a manner that inhibits VOC evaporation and that is in compliance with appropriate/legal methods of disposal.
- xi. Signage Requirements: The Permittee, when using cleaning solvent other than low VOC cleaner, in any solvent cleaning machine (degreaser) or dip tank shall provide on the machine, or within $3\frac{1}{4}$ feet (1 meter) of the machine, a permanent, conspicuous label or placard which includes each item listed in Rule 331, Section 303.2, as provided in the attachment to these Permit Conditions.

[SIP Rule 331 §303]

14. Solvent Specifications:

- a. Except as provided in Subsection [b] of this Permit Condition, the Permittee, when using cleaning solvent other than a low VOC cleaner, shall comply with the following requirements:
 - i. Use a conforming solvent; or
 - ii. Use a sealed system.
- b. Exemption: The following are exempt from Subsection [a] of this Permit Condition:
 - i. Low VOC cleaners.
 - ii. Wipe cleaning.
 - iii. Small cleaners.
 - iv. Aerosol cans, squirt bottles and other solvent containers intended for handheld use.
 - v. Semiconductor manufacturing (Rule 338);

[SIP Rule 331 §§304, 307.2, 307.3(b), 308.1, 308.2]

15. Batch Cleaning Equipment:

The Permittee, when using cleaning solvent other than a low VOC cleaner, shall comply with the following requirements:

- a. With Remote Reservoir: A batch cleaning machine with remote reservoir, including cabinet type(s), shall be equipped with the following:

- i. A sink-like work area or basin which is sloped sufficiently towards the drain so as to prevent pooling of cleaning solvent.
- ii. A single, unimpeded drain opening or cluster of openings served by a single drain for the cleaning solvent to flow from the sink into the enclosed reservoir. Such opening(s) shall be contained within a contiguous area not larger than 15.5 square inches (100 cm²).
- iii. Solvent Return: Provide a means for drainage of cleaned parts such that the drained solvent is returned to the cleaning machine.

[SIP Rule 331 §305.1]

- b. With Internal Reservoir (includes dip tanks): A batch cleaning machine without a remote reservoir shall be equipped with all of the following:
 - i. Have and use an internal drainage rack or other assembly that confines within the freeboard all cleaning solvent dripping from parts and returns it to the hold of the cleaning machine (degreaser); and
 - ii. Have an impervious cover which when closed prevents cleaning solvent vapors in the cleaning machine from escaping into the air/atmosphere when not processing work in the cleaning machine. A cover shall be fitted so that in its closed position the cover is between the cleaning solvent and any lip exhaust or other safety vent, except that such position of cover and venting may be altered by an operator for valid concerns of flammability established in writing and certified by a Certified Safety Professional or a Certified Industrial Hygienist to meet health and safety requirements.
 - iii. In the absence of additional applicable freeboard standards, freeboard height shall be not less than 6 inches (15.2 cm); and
 - iv. The freeboard zone shall have a permanent, conspicuous mark that locates the maximum allowable solvent level which conforms to the applicable freeboard requirements.

[SIP Rule 331 §305.1]

- c. Using Cleaning Solvent that is Heated or Agitated: If a cleaning machine uses a cleaning solvent at a temperature above 120°F (49°C) or agitates the solvent, then the Permittee shall comply with one of the following:
 - i. Remote Reservoir Cleaning Machines: For a remote reservoir cleaning machine, comply with Subsection a. of this Permit Condition and one of the following:
 - 1) Use a stopper in the drain whenever the sink or cabinet is empty of solvent and nothing is being handled in the sink; or
 - 2) Cover the sink or cabinet whenever the sink or cabinet is empty of solvent and nothing is being handled in the sink.
 - ii. Internal Reservoir Cleaning Machines: For an internal reservoir cleaning machine, comply with Subsection b. of this Permit Condition and one of the following:
 - 1) A Water Cover: A floating layer of water (insoluble in the solvent) at least 1 inch thick, and a freeboard at least 6 inches above the top of the solvent shall be present; or
 - 2) Freeboard and Cover:
 - a) The basin shall have a freeboard ratio of 0.75 or greater and an impervious cover shall cover the basin whenever work is not being processed; and
 - b) If a non-conforming solvent is used, the cover shall be of a sliding or rolling type which is designed to easily open and close in a horizontal plane without disturbing the vapor zone.
 - iii. Cabinet Style: Keep a cabinet-style cleaning machine closed at all times that it contains cleaning solvent, except when introducing or removing work from the machine.

[SIP Rule 331 §305.3]

16. In-line Cleaning Machines:

The Permittee shall not operate an in-line cleaning machine using cleaning solvent unless it complies with all of the following requirements:

- a. Features:
 - i. Carry-Out Prevention: Equip the cleaning machine with either a drying tunnel or another means, such as a rotating basket, sufficient to prevent cleaned parts from carrying out cleaning solvent liquid or vapor.
 - ii. Enclosed Design: An in-line cleaning machine shall be fully enclosed except for entrance and exit portals.
 - iii. Cover: During shutdown hours or if the cleaning machine is idle for more than 30 minutes, a cover shall be used to close the entrance and exit and any opening greater than 16 square inches (104 cm²).
- b. Minimized Openings: Entrances and exits should silhouette workloads so that the average clearance between parts and the edge of the cleaning machine opening is either less than four inches (10 cm), or less than 10% of the width of the opening.
- c. The machine shall have a freeboard ratio greater than or equal to 0.75.

[SIP Rule 331 §306]

17. Additional Equipment Requirements for Special Cleaning Situations (excluding Handheld Bottles/Containers):

- a. Blasting/Misting with Conforming Solvent: Blasting or misting with conforming solvent shall be performed in a device having internal drainage, a reservoir or sump, and a completely enclosed cleaning chamber, designed so as to prevent any perceptible liquid from emerging from the device. The device shall be operated such that there is no perceptible leakage from the device except for incidental drops from drained, removed parts.
- b. High Pressure Flushing with Conforming Solvent: Cleaning systems using cleaning solvent that emerges from an object undergoing flushing with a visible mist or at a pressure exceeding 10 psig, shall use a containment system that is designed to prevent any perceptible cleaning solvent liquid from becoming airborne outside the containment system, such as a completely enclosed chamber.
- c. Non-Conforming Solvent: Blasting, misting or high pressure flushing using a non-conforming solvent shall be performed in a sealed system.

[SIP Rule 331 §307]

EMERGENCY GENERATORS**18. Operational Limitations:**

- a. The Permittee shall limit the operation of Stationary Fire Pump Engine to no more than 100 hours per calendar year per engine for the purposes of reliability activities such as readiness, calibration, or maintenance.

[County Rule 324 §§104.5, 205][40 CFR §60.4211(e)]
- b. The Permittee shall limit the operation of emergency generator engines and fire pump engines to no more than the following, which include the hour limitation listed in Subpart [a] above:
 - i. Five Fab 12 Stationary Emergency Generators – 42 hours per year each.
 - ii. All remaining Single Stationary Emergency Generators – 30 hours per year each.
 - iii. Any Single Stationary Fire Pump engine – 174 hours per year each.

[County Rule 220 §302.2] [Locally Enforceable Only]
- c. The emergency generator(s) shall not be used for peak shaving. The emergency generator(s) shall only be used for the following purposes:

- i. For power when normal power service fails from the serving utility or if onsite electrical transmission or onsite power generation equipment fails;
- ii. Reliability-related activities such as engine readiness, calibration, or maintenance or to prevent the occurrence of an unsafe condition during electrical system maintenance.

[SIP Rule 324 §104]

Emergency Engines subject to 40 CFR 60 Subpart III

Only the following engines identified in the table below are subject to the requirements in Permit Conditions 19 through 22:

<u># of Engines</u>	<u>Manufacturer</u>	<u>Model</u>	<u>Rated Brake Horsepower</u>	<u>Location</u>	<u>Year of Manufacture</u>	<u>EPA Emission Standard</u>
3	Cummins	2292 DQKC	2922	Fab 32 Generator House	05/2006	Table 1, NSPS III
2	Caterpillar	3516C DITA	2937	Fab 32S Litho Generator Pad	2007	Tier II
1	Cummins	2000-DQKAB	2922	Fab 32 Generator House	2008	Tier II
2	MTU	2000-XC6DT2	3058	Fab 32 Litho Generator Pad	2010	Tier II
18	Cummins	2500-DQLE	3680	Fab 42 Egen Building	2011	Tier II
1	Caterpillar	C15 DITA	546	BRW Area RW1A	2012	Tier III

19. Emissions Limitations/Standards:

- a. The above generators shall meet the EPA Emissions standards as specified in the table.
- b. The Three Fab 32 Emergency Generators – Cummins 2922 DQKC 2922 BHP, shall meet emission standards found in Table 1 of NSPS III as required by 40 CFR §60.4205:

Maximum engine power	NO _x	HC	CO	PM
KW>560 (HP>750)	9.2 g/KW-hr	1.3 g/KW-hr	11.4 g/KW-hr	0.54 g/KW-hr

[40 CFR §60.4205][40 CFR §60.4211(c)]

20. Operating Requirements

- a. Additional Opacity Standard:
For 2007 model year and later CI ICE rated 3,000 HP or less and 2011 model year and later CI ICE rated greater than 3,000 HP, the Permittee shall not allow exhaust opacity to exceed 15% during the lugging mode. This restriction does not apply to fire pump engines or engines that run at constant speed.
[40 CFR §§60.4205, 89.113(a)(2)]
- b. Crankcase Emissions:
For the engines specified in Permit Condition 20.a, the Permittee shall not discharge crankcase emissions into the ambient atmosphere, unless such crankcase emissions are permanently routed into the exhaust and included in all exhaust emission measurements. This provision does not apply to engines using turbochargers, pumps, blowers, or superchargers for air induction or fire pump engines.
[40 CFR §§60.4205, 89.112(e)]
- c. The Permittee shall operate and maintain the engine according to the manufacturer's written instructions, or procedures developed by the Permittee that are approved by the engine manufacturer over the entire life of the engine.
[40 CFR §60.4211(a)][40 CFR §60.4206]

- d. The Permittee shall only change those engine settings that are permitted by the manufacturer.
[40 CFR §60.4211(a)]
- e. The Permittee shall meet the requirements of 40 CFR Parts 89 and/or 1068, as they apply.
[40 CFR §60.4211(a)]

21. Fuel Limitations:

- a. The Permittee shall only use diesel fuel that has a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent; and has a maximum sulfur content of 15 parts per million (ppm) in engines subject to NSPS III, except that any existing diesel fuel purchased (or otherwise obtained) prior to October 1, 2010, may be used until depleted:
[40 CFR §§60.4207(a,b), 80.510(a,b)]

22. Monitoring:

- a. The Permittee shall not operate any stationary emergency generator(s) unless its cumulative run time meter is installed and working properly.
[County Rule 220 §302.4] [40 CFR §60.4209]
- b. For emergency generators manufactured after 4/1/06 and fire pumps manufactured after 6/1/06, the Permittee shall install a non-resettable hour meter prior to startup of the engine.
[40 CFR §60.4209(a)]

Emergency Engines subject to 40 CFR 63 Subpart ZZZZ

Only the following engines are subject to the requirements in Permit Conditions 24 through 28.

<u># of Engines</u>	<u>Manufacturer</u>	<u>Model</u>	<u>Rated Brake Horsepower</u>	<u>Location</u>	<u>Year of Manufacture</u>
4	Caterpillar	3516 D1TA	2518	Fab 12 Generator Pad	1994
2	Caterpillar	3306 BT	275	Pumphouse #1 & #2	1994
4	Caterpillar	3516 D1TA	2518	Fab 32S	2000
4	Cummins	1750 DQKB	2922	Fab 32S	2000
1	Caterpillar	3516 D1TA	2518	Fab 12 Generator Pad	2004
1	Caterpillar	3412	897	Fab 12 Litho Chiller Pad	2005

23. Compliance Date:

The Permittee shall ensure compliance with all applicable requirements of 40 CFR 63 Subpart ZZZZ (40 CFR §63.6580 - §63.6675) no later than May 3, 2013.
[40 CFR §63.6595]

24. General Compliance Requirements:

The Permittee shall operate and maintain all reciprocating compression-ignition (CI) engines and associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to MCAQD which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.
[40 CFR §63.6605]

25. Fuel Limitations:

- a. The Permittee shall not use any fuel that contains more than 0.05% sulfur by weight, alone or in combination with other fuels in the engines subject to 40 CFR 63 Subpart ZZZZ (40 CFR §63.6580 - §63.6675)
[SIP Rule 324 §301.1]

26. Operating Requirements:

- a. The Permittee shall comply with the following maintenance schedule for each engine:
- i. Change oil and filter or perform an Oil Analysis Program every 500 hours of operation or annually, whichever comes first. The analysis program must at a minimum analyze the following three parameters: Total Base Number, viscosity and percent water content. The condemning limits for these parameters are as follows:
 - 1) Total Base Number is less than 30 percent of the Total Base Number of the oil when new;
 - 2) Viscosity of the oil has changed by more than 20 percent from the viscosity of the oil when new;
 - 3) Percent water content (by volume) is greater than 0.5.

If none of these limits are exceeded, the Permittee is not required to change the oil. If any of the limits are exceeded, the Permittee must change the oil before continuing to use the engine. The Permittee must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for the engine. The analysis program must be part of the maintenance plan for the engine

- ii. Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first, and replace as necessary;
- iii. Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

[40 CFR §63.6603(a); Table 2d(4)]

- b. If an engine is operating during an emergency and it is not possible to shut down the engine in order to perform the maintenance requirements on the schedule required by this Permit Condition, or if performing the maintenance operations on the required schedule would otherwise pose an unacceptable risk under Federal, State, or local law, the maintenance operations can be delayed until the emergency is over or the unacceptable risk under Federal, State, or local law has abated. The maintenance operations shall be performed as soon as practicable after the emergency has ended or the unacceptable risk under Federal, State, or local law has abated. Sources must report any failure to perform the maintenance operations on the schedule required and the Federal, State or local law under which the risk was deemed unacceptable, in accordance with Permit Condition 48.d.

[40 CFR §63.6603(a); Table 2d]

- c. During periods of startup, the Permittee shall minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes.

[40 CFR §63.6625(h)]

27. Work and Management Practices:

The Permittee shall comply with one of the following work/management practices:

- a. Operate and maintain the stationary RICE according to the manufacturer's emission-related operation and maintenance instructions; or
- b. Develop and follow your own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions.

[40 CFR §63.6640(a); Table 6(9)]

EXTERNAL COMBUSTION SOURCES (BOILERS/HEATERS/RCTOs)**28. Material Limitations:**

In order to ensure compliance with the Allowable Emission Limitations in Permit Condition 1, the Permittee shall limit the 12-months rolling total usage of natural gas to not exceed 1600 MMscf.

[County Rule 220 §302.2]

29. Operational Limitations:

- a. The Permittee may only use natural gas, butane and propane as fuels for boilers, heaters and rotor-concentrator/thermal oxidizers.
- b. The Permittee shall install and ensure natural gas meters are operational on all boilers.

[County Rule 220 §§302.2, 302.4]

Additional requirements for Boilers with Input Capacities between 10 MMBtu/Hr and 100 MMBtu/Hr

30. New Source Performance Standard (NSPS):

Boilers for which construction, modification, or reconstruction is commenced after June 9, 1989 and have a maximum design heat input capacity greater than or equal to 10 million Btu/hr, but less than 100 million Btu/hr are subject to Title 40, Part 60, Subpart Dc of the Code of Federal Regulations (40 CFR 60, Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units).

[County Rule 360 §301.5]

- a. The Permittee shall submit to the Control Officer notification of the date of construction and actual startup of any new boiler(s), as provided in 40 §CFR 60.7 and Paragraph b of this Permit Condition. This notification shall include:
 - i. The design heat input capacity of the boiler(s) and identification of fuels to be combusted in the boiler(s).
 - ii. The annual capacity factor at which the Permittee anticipates operating the boiler(s) based on all fuels fired and based on each individual fuel fired.

[40 CFR §60.48c(a)]

- b. The Permittee shall submit to the Control Officer notification of the date of construction or reconstruction, and actual startup of any new boiler(s), as follows:
 - i. A notification of the date construction or reconstruction of the new boiler(s) is commenced postmarked no later than 30 days after such date. This requirement shall not apply in the case of mass-produced facilities which are purchased in completed form.
 - ii. A notification of the actual date of initial startup of new boiler(s) postmarked within 15 days after such date.

[40 CFR §60.7]

31. BACT Limitations – Nitrogen Oxides and Carbon Monoxide:

The Permittee shall comply with the following in order to meet County Rule 241: Best Available Control Technology for Boilers and Heaters where indicated:

- a. Controls for the boilers for Fab 12, except the boiler identified in part a.i.1), shall be the installation, operation and maintenance of low NO_x burners having NO_x emission less than or equal to 50 ppmv (parts per million by volume), with an emission level of no more than 100 ppmv of CO, corrected to 3% O₂ when fired by natural gas.
 - i. The Permittee shall ensure that the following boiler(s) be equipped with low NO_x burners capable of meeting NO_x emissions less than or equal to 12 ppmv corrected to 3% O₂ and CO emissions less than or equal to 50 ppmv corrected to 3% O₂ when fired by natural gas, as agreed upon for meeting BACT.
 - 1) Fab 12, Boiler #1 – 51.7 MMbtu/hr Johnston Unit ID 10958-01
- b. Control for each of the boilers for Fab 32S, except the boiler identified in part b.i.1). below, shall be the installation, operation and maintenance of low NO_x burners having NO_x emission less than or equal to 30 ppmv, with an emission level of no more than 50 ppmv of CO, corrected to 3% O₂ when fired by natural gas.
 - i. The Permittee shall ensure that the following boiler(s) be equipped with low NO_x burners capable

of meeting NO_x emissions less than or equal to 12 ppmv corrected to 3% O₂ and CO emissions less than or equal to 50 ppmv corrected to 3% O₂ when fired by natural gas, as agreed upon for meeting BACT.

- 1) Fab 22, Boiler #5 – 42 MMbtu/hr Johnston Unit ID 10905-01
- c. Control for each of the boilers for Fab 32 shall be the installation, operation and maintenance of low NO_x burners having NO_x emission less than or equal to 12 ppmv and CO emissions less than or equal to 50 ppmv corrected to 3% O₂ when fired by natural gas as agreed upon for meeting BACT.
- d. Control for Fab 42 boilers shall ensure the boilers be equipped with low NO_x burners with Flue Gas Recirculation capable of meeting NO_x emissions less than or equal to 12 ppmv corrected to 3% O₂ and CO emissions less than or equal to 50 ppmv corrected to 3% O₂ when fired by natural gas, as agreed upon for meeting BACT.
- e. Controls for future boilers shall be determined in accordance with BACT.
[County Rule 241 §301] [County Rule 220 §§302.2]

COOLING TOWER OPERATIONS:

32. Operating Limitations:

- a. The Permittee shall limit the total dissolved solids (TDS) concentration of the circulating water of each cooling tower unit to 6500 ppm, based on a 12-month rolling average. The Permittee may calculate this value as a rolling average for the month based on the monthly conductivity sampling described below in section g.
[County Rule 220 §302.2] [Locally Enforceable Only]
- b. The cooling towers shall have a maximum drift rate of no more than 0.001%. This efficiency shall be achieved through the use of drift eliminators.
[County Rule 220 §302.2] [Locally Enforceable Only]
- c. The Permittee shall not allow exhaust from the cooling towers to bypass the drift eliminators.
- d. The Permittee shall inspect the cooling tower drift eliminators for proper installation, maintenance, and operation every 6 months. The results of the inspection shall be recorded in a facility log.
[County Rule 220 §§302.2, 302.5, 302.7] [Locally Enforceable Only]
- e. The Permittee shall keep written documentation provided by the vendor/manufacturer of the maximum cooling tower drift rate and the premise, basis, and justification for the rate.
[County Rule 220 §302.5] [Locally Enforceable Only]
- f. The Permittee shall keep maintenance records for the Wet Cooling Tower drift eliminators.
[County Rule 220 §302.7] [Locally Enforceable Only]
- g. Conductivity:
 - i. On at least a monthly basis, when the towers are in operation, the Permittee shall measure and record the conductivity in the circulating water of each unit cooling. If the towers are not in operation on the scheduled day for sampling, the Permittee shall obtain a sample on the next day the cooling tower is operating.
 - ii. The measured conductivity value will be used in the calculations to determine PM₁₀ emissions from each cooling tower. An average conductivity value may be used if multiple readings are taken in one month.
[County Rule 220 §302.5] [Locally Enforceable Only]

ODORS:

33. Odors and Gaseous Air Contaminates

- a. Where a stack, vent or other outlet is at such a level that air contaminants are discharged to adjoining property, the Control Officer may require the installation of abatement equipment or the alteration of

such stack, vent, or other outlet to a degree that will adequately dilute, reduce or eliminate the discharge of air contaminants to adjoining property.

[County Rule 320 § 303] [SIP Rule 32.D]

- b. The Permittee shall not emit gaseous or odorous air contaminants from equipment, operations or premises under his control in such quantities or concentrations as to cause air pollution.

[County Rule 320 § 300] [SIP Rule 32.A]

- c. Odors and Gaseous Air Contaminates:

The Permittee shall maintain a log of complaints of odors detected off-site. The log shall contain a description of the complaint, date and time that the complaint was received, and if given, name and/or phone number of the complainant. The logbook shall describe what actions were performed to investigate the complaint, the results of the investigation, and any corrective actions that were taken.

[County Rule 320 §300] [SIP Rule 32] [County Rule 220 §§302.2]

- d. Limitation - Hydrogen Sulfide: No person shall emit hydrogen sulfide from any location in such a manner or amount that the concentration of such emissions into the ambient air at any occupied place beyond the premises on which the source is located exceeds 0.03 parts per million by volume for any averaging period of 30 minutes or more.

[County Rule 320 §304] [SIP Rule 32.G]

- i. Compliance Demonstration:

The Permittee shall perform a compliance demonstration by conducting a test to monitor hydrogen sulfide levels within 90 days of any of the following events:

- 1) The receipt of three (3) odor complaints within any 12-month period; or
- 2) The receipt of a written request from MCAQD.

The compliance demonstration shall be performed at a location representing the nearest occupied place beyond the premises on which the source of hydrogen sulfide is located.

The Permittee shall submit a report within 30 days of completion of each demonstration to MCAQD, Attn: Compliance Division Manager that details the results of each compliance demonstration.

[County Rule 220 §§302.4] [Rule 320 §304]

- ii. In the event of an exceedance of hydrogen sulfide, the Permittee shall submit a Compliance Plan to the Compliance Manager of MCAQD for approval. The Compliance Plan shall include:

- 1) Technological evaluation of additional odor control alternatives at the plant.
- 2) Additional monitoring and/or air dispersion modeling to determine property line concentration of hydrogen sulfide based on the implementation of selected odor control alternatives.
- 3) Conceptual design and preliminary cost estimate for the proposed odor control alternatives.
- 4) Schedule for design and construction of the proposed control alternatives.
- 5) Description of recommended actions.

The Permittee shall complete and submit the Compliance Plan within 120 days of exceeding the hydrogen sulfide emission limitation.

[County Rule 220 §§303, 302.3]

ARCHITECTURAL COATING OPERATIONS

34. Operational Limitations / Standards:

- a. The Permittee shall limit the volatile organic compound (VOC) content of architectural coatings as follows:

i. Pavement Sealer:

The Permittee shall not apply any architectural coating manufactured after July 13, 1988, which is recommended for use as a bituminous pavement sealer unless it is an emulsion type coating.

[County Rule 335 §301]

ii. Non-Flat Architectural Coating:

The Permittee shall not apply any non-flat architectural coating manufactured after July 13, 1990, which contains more than 2.1 lbs (250 g/l) of volatile organic compounds per gallon of coating, excluding water and any colorant added to tint bases. These limits do not apply to specialty coatings listed below.

[County Rule 335 §303]

iii. Flat Architectural Coating:

The Permittee shall not apply any flat architectural coating manufactured after July 13, 1989, which contains more than 2.1 lbs (250 g/l) of volatile organic compounds per gallon of coating, excluding water and any colorant added to tint bases. These limits do not apply to specialty coatings listed below.

[County Rule 335 §304]

iv. Specialty Coatings:

The Permittee shall not apply any architectural coating that exceeds the limits specified in Rule 335 section 305. The limits are expressed in pounds of VOC per gallon of coating as applied, excluding water and any colorant added to tint bases.

[County Rule 335 §305]

b. Exemptions:

The VOC content requirement of this Permit Condition shall not apply to the following:

- i. Architectural coatings supplied in containers having capacities of one quart or less.
- ii. Architectural coatings recommended by the manufacturer for use solely as one or more of the following:
 - 1) Below ground wood preservative coatings.
 - 2) Bond breakers.
 - 3) Fire retardant coatings.
 - 4) Graphic arts coatings (sign paints)
 - 5) Mastic texture coatings.
 - 6) Metallic pigmented coatings.
 - 7) Multi-colored paints.
 - 8) Quick-dry primers, sealers and undercoaters.
 - 9) Shellacs.
 - 10) Swimming pool paints.
 - 11) Tile-like glaze coatings.

[County Rule 335 §§306 and 307]

c. Labeling Required:

Containers for all architectural coatings shall carry a statement of the manufacturer's recommendation regarding thinning of the coatings. The recommendation shall specify that the coating is to be employed without thinning or diluting under normal environmental and application conditions, unless the recommended thinning for normal environmental and application conditions does not cause the coating

to exceed its applicable standard.

[County Rule 335 §401]

d. **Manufacture Date Required:**

Containers for all coatings subject to the provisions of Rule 335 shall display the date of manufacture of the contents or a code indicating the date of manufacture.

[County Rule 335 §402]

FUGITIVE DUST FROM DUST GENERATING OPERATIONS

35. Applicability:

- a. The provisions of this Section apply to all dust-generating operations except for those dust-generating operations listed in the Condition below. Any person engaged in a dust-generating operation subject to this Section shall be subject to the standards and/or requirements of this Section before, after, and while conducting such dust-generating operation, including during weekends, after work hours, and on holidays.
- b. For the purpose of Rule 310, any control measure that is implemented must achieve the applicable standard(s) described in Rule 310, as determined by the corresponding test method(s), as applicable, and must achieve other applicable standard(s) set forth in Rule 310.
- c. Regardless of whether a dust-generating operation is in compliance with an approved Dust Control Plan or there is no approved Dust Control Plan, the owner and/or operator of a dust-generating operation shall be subject to all requirements of Rule 310 at all times.
- d. Failure to comply with the provisions of these requirements, as applicable, and/or of an approved Dust Control Plan, shall constitute a violation.

[SIP Rule 310 §§102, 301]

36. Exemptions:

The provisions of this Section shall not apply to the following activities:

- a. Emergency activities that may disturb the soil conducted by any utility or government agency in order to prevent public injury or to restore critical utilities to functional status.
- b. Establishing of initial landscapes without the use of mechanized equipment or conducting landscape maintenance without the use of mechanized equipment. However, establishing initial landscapes without the use of mechanized equipment and conducting landscape maintenance without the use of mechanized equipment shall not include grading or trenching performed to establish initial landscapes or to redesign existing landscapes.
- c. Rooftop operations for cutting, drilling, grinding, or coring roofing tile when such activity is occurring on a pitched roof.

[SIP Rule 310 §103]

37. Dust Control Plan Requirements:

- a. The owner and/or operator of a dust-generating operation that involves operations with a disturbed surface area that equals or exceeds 0.10 acre (4,356 square feet) shall maintain a Dust Control Plan before commencing any routine dust-generating operation. The Dust Control Plan shall be kept available onsite at all times.
- b. The Permittee shall comply with the requirements of the Dust Control Plan and the provisions of MCAQD Rule 310 Sections 301 – 310 at all times.

[SIP Rule 310 §§301-310, 302.3, 409]

38. Visible Emission Requirements for Dust-Generating Operations:

- a. The Permittee shall not cause or allow visible fugitive dust emissions to exceed 20% opacity.

- b. The Permittee shall not cause or allow visible emissions of particulate matter, including fugitive dust, beyond the property line within which the emissions are generated. Visible emissions shall be determined by a standard of no visible emissions exceeding 30 seconds in duration in any six-minute period as determined by using EPA Reference Method 22. This requirement does not apply to dust-generating operations conducted within 25 feet of the property line.

[SIP Rule 310 §303.1]

39. Exemptions from Dust-Generating Operation Opacity Limitation Requirement:

- a. If wind conditions cause fugitive dust emissions to exceed the opacity requirements in this permit, despite implementation of the Dust Control Plan an owner and/or operator shall:
- Ensure that all control measures and requirements of the Dust Control Plan are implemented and the subject violations cannot be prevented by better application, operation, or maintenance of these measures and requirements.
 - Cease dust-generating operations and stabilize any disturbed surface area consistent with the Stabilization Requirements of these conditions.
 - Compile records consistent with the recordkeeping requirements of these Permit Conditions and document the control measure and other Dust Control Plan requirements implemented.
- b. Emergency Maintenance of Flood Control Channels and Water Retention Basins: The opacity limit shall not apply to emergency maintenance of flood control channels and water retention basins, provided that control measures are implemented.

[SIP Rule 310 §303.2]

40. Stabilization Requirements for Dust-Generating Operations:

- a. Unpaved Parking Lot: The owner and/or operator of any unpaved parking lot shall not allow visible fugitive dust emissions to exceed 20% opacity and shall not allow silt loading equal to or greater than 0.33 oz/ft^2 . However, if silt loading is equal to or greater than 0.33 oz/ft^2 , then the owner and/or operator shall not allow the silt content to exceed 8%. An unpaved parking lot includes any area that is not paved and that is used for parking, maneuvering, material handling, or storing motor vehicles and equipment

[SIP Rule 310 §§232, 304.1]

- b. Unpaved Haul/Access Road:

An unpaved haul/access road includes any on-site road or equipment path that is not paved and is used by commercial, industrial, institutional, and/or governmental traffic.

- The owner and/or operator of any unpaved haul/access road (whether at a work site that is under construction or at a work site that is temporarily or permanently inactive) shall not allow visible fugitive dust emissions to exceed 20% opacity and shall not allow silt loading equal to or greater than 0.33 oz/ft^2 . However, if silt loading is equal to or greater than 0.33 oz/ft^2 , then the owner and/or operator shall not allow the silt content to exceed 6%.

[SIP Rule 310 §§231, 233]

- The owner and/or operator of any unpaved haul/access road (including at a work site that is under construction or a work site that is temporarily or permanently inactive) shall, as an alternative to meeting the stabilization requirements for an unpaved haul/access road in Subsection [41.b.i] of this Condition, limit vehicle trips to no more than 20 per day per road and limit vehicle speeds to no more than 15 miles per hour. If complying with this subsection of this Permit, the owner and/or operator must include, in a Dust Control Plan, the maximum number of vehicle trips on the unpaved haul/access roads each day (including number of employee vehicles, earthmoving equipment, haul trucks, and water trucks) and a description of how vehicle speeds will be restricted to no more than 15 miles per hour.

[SIP Rule 310 §304.2]

- c. Disturbed Surface Area: The owner and/or operator of any disturbed surface area on which no activity

is occurring (including at a work site that is under construction or a work site that is temporarily or permanently inactive) shall meet at least one of the standards described below, as applicable. Should such a disturbed surface area contain more than one type of stabilization characteristic, such as soil, vegetation, or other characteristic, which is visibly distinguishable, then the owner and/or operator shall test each representative surface separately for stability, in an area that represents a random portion of the overall disturbed conditions of the site, in accordance with the appropriate test methods described in Section 501.2(c) of Rule 310 and in Appendix C (Fugitive Dust Test Methods) of MCAQD rules. The owner and/or operator of such disturbed surface area on which no activity is occurring shall be considered in violation of Rule 310 if the area is not maintained in a manner that meets at least one of the standards listed below, as applicable. An area is considered to be a disturbed surface area until the activity that caused the disturbance has been completed and the disturbed surface area meets the standards described in this subsection.

- i. Maintain a soil crust;
- ii. Maintain a threshold friction velocity (TFV) for disturbed surface areas corrected for non-erodible elements of 100 cm/second or higher;
- iii. Maintain a flat vegetative cover (i.e., attached (rooted) vegetation or unattached vegetative debris lying on the surface with a predominant horizontal orientation that is not subject to movement by wind) that is equal to at least 50%;
- iv. Maintain a standing vegetative cover (i.e., vegetation that is attached (rooted) with a predominant vertical orientation) that is equal to or greater than 30%;
- v. Maintain a standing vegetative cover (i.e., vegetation that is attached (rooted) with a predominant vertical orientation) that is equal to or greater than 10% and where the threshold friction velocity is equal to or greater than 43 cm/second when corrected for non-erodible elements;
- vi. Maintain a percent cover that is equal to or greater than 10% for non-erodible elements; or
- vii. Comply with a standard of an alternative test method, upon obtaining the written approval from the Control Officer and the Administrator.

[SIP Rule 310 §304.3]

41. Soil Moisture:

If water is the chosen control measure in an approved Dust Control Plan, the owner and/or operator of a dust-generating operation shall operate a water application system on-site (e.g., water truck, water hose) while conducting any earthmoving operations on disturbed surface areas 1 acre or larger, unless a soil crust is maintained or the soil is sufficiently damp to prevent loose grains of soil from becoming dislodged.

[SIP Rule 310 §307]

42. Dust Control Training Classes for Dust-Generating Operations:

- a. At least once every three years, the following people shall successfully complete a Basic Dust Control Training Class conducted or approved by the Control Officer.
 - i. Water truck drivers.
 - ii. Water-pull drivers.
 - iii. The site superintendent or other designated on-site representative of the permit holder.
- b. Any certification issued to a person having successfully completed a Basic Dust Control Training Class conducted or approved by the Control Officer may be suspended or revoked for cause, including, but not limited to, inappropriate ethical activities or conduct associated with the dust control program.

[SIP Rule 310 §309.1]

43. Dust Control Plan Revisions

- a. If the Control Officer determines that an approved Dust Control Plan has been followed, yet fugitive dust emissions from any dust-generating operation still exceed the standards of this Permit, the Control

Officer shall issue a written notice to the owner and/or operator of the dust-generating operation explaining such determination. The owner and/or operator of a dust-generating operation shall make written revisions to the Dust Control Plan and shall submit such revised Dust Control Plan to the Control Officer within three working days of receipt of the Control Officer's written notice, unless such time period is extended by the Control Officer, upon request, for good cause. During the time that such owner and/or operator is preparing revisions to the approved Dust Control Plan, such owner and/or operator must still comply with all requirements of this Permit.

[SIP Rule 310 §403.1]

- b. The Permittee shall request a Dust Control Plan revision with a submittal in the manner and form prescribed by the Control Officer if:
- i. The acreage of a project changes;
 - ii. The permit holder changes;
 - iii. The name(s), address(es), or phone numbers of person(s) responsible for the submittal and implementation of the Dust Control Plan and responsible for the dust-generating operation change; and
 - iv. If the activities related to the purposes for which the Dust Control permit was obtained change.

[SIP Rule 310 §403.2]

44. Records Retention:

The Permittee shall retain copies of approved Dust Control Plans, control measures implementation records, and all supporting documentation for at least two years from the date such records were initiated.

[SIP Rule 310 §503]

SITE-WIDE REQUIREMENTS

45. Opacity:

- a. The Permittee shall not discharge into the ambient air from any single source of emissions any air contaminant other than uncombined water, in excess of 20 percent opacity, except as described in Rule 300 § 302. Opacity shall be determined by observations of visible emissions conducted in accordance with EPA Reference Method 9 as modified by EPA Reference Method 203B.

[County Rule 324 §303][County Rule 300 §§ 301, 302, and 501]

[Locally Enforceable Only]

46. Recordkeeping:

The Permittee shall maintain the following records for a period of at least five years, unless otherwise stated, from the date of the records and make them available to the Control Officer upon request:

- a. The Permittee shall maintain a current list of VOC containing and HAP containing materials, including their formulations as applied, make-up solvents, and for all VOC and HAP containing materials not considered Insignificant or Trivial under MCAQD Appendixes D or E, stating the VOC or HAP content of each in either pounds per gallon or grams per liter.
- i. A facility using any conforming solvent shall have on site the written value of the total VOC vapor pressure of each such solvent, in one of the following forms:
 - 1) A Manufacturer's Technical Data Sheet,
 - 2) A Manufacturer's Safety Data Sheet (MSDS), or
 - 3) Safety Data Sheets (SDS); or
 - 4) Actual test results.
- b. The Permittee shall keep monthly usage records of VOC containing and HAP containing materials used on site and usage records for all materials which generate HAP emissions.

[SIP Rule 331 §501]

- c. The Permittee shall maintain records of the 12-month rolling total emissions to demonstrate compliance with the emission limits of Permit Condition 1. The 12-month rolling total emissions shall be calculated for each pollutant listed in Permit Condition 1 within 45 days following the end of each calendar month by summing the emissions over the most recent 12 calendar months. The Permittee shall report these records to MCAQD according to Permit Condition 47.a or at the request of the Control Officer.
- [County Rule 220 §§302.7]
- d. An initial one time entry listing the particular engine combustion type (compression or spark-ignition or rich or lean burn); manufacturer; model designation, rated brake horsepower, serial number and where the engine is located on the site.
- [County Rule 324 §502.1]
- e. Monthly records of engine operation. The records shall include the purpose of operation and the duration of time the engine was operated. The record shall identify whenever the operation of the engine was for emergency purposes.
- [40 CFR§ 60.4211(e)][County Rule 220 §§302.7]
- f. A copy of engine manufacturer data indicating compliance with the standards in this Permit for each compression ignition engine, and shall make the documentation available to MCAQD upon request.
- [County Rule 220 §§302.7][40 CFR §60.4211(b)(3)]
- g. For generators manufactured on or before June 12, 2007, the Permittee shall maintain an onsite copy of the manufacturer's written instructions, or procedures developed by the Permittee in accordance with these Permit Conditions and make it available to MCAQD upon request.
- [County Rule 220 §§302.7] [40 CFR §§63.6655(e)(2), 63.6660]
- h. The Permittee shall maintain records of any monitoring and maintenance requirements and key operating parameters as specified in the O&M and/or Adequate Maintenance and Calibration (AMC) Plans as outlined in Permit Condition 9.h for POUs or Exhaust Conditioner units.
- [County Rule 220 §§302.7][County Rule 312 §501][County Rule 338 §500]
- i. The Permittee shall determine monthly usage of natural gas based on purchase records or meter readings. The Permittee shall determine monthly diesel use based on engine hours of operations and manufacturers' stated fuel consumption rates.
- [County Rule 220 §§302.7]
- j. The Permittee shall maintain records to demonstrate compliance with Permit Condition 8.d, specifically that the RCTO distribution systems are continuously monitored to ensure adequate negative pressure is maintained within system set points.
- [County Rule 220 §§302.7]
- k. The Permittee shall keep a log of any and all odor complaints received and any action taken as a result. If no annual odor complaints were received, the log should indicate as such.
- [County Rule 220 §§302.7]
- l. The Permittee shall keep a written record of self-inspection on each day dust-generating operations are conducted. Self-inspection records shall include daily inspections for crusted or damp soil, trackout conditions and clean-up measures, daily water usage, and dust suppressant application. Such written record shall also include the following information:
- i. Method, frequency, and intensity of application or implementation of the control measures;
 - ii. Method, frequency, and amount of water application to the site;
 - iii. Street sweeping frequency;
 - iv. Types of surface treatments applied to and maintenance of trackout control devices, gravel pads, fences, wind barriers, and tarps;
 - v. Types and results of test methods conducted;

- vi. If contingency control measures are implemented, actual application or implementation of contingency control measures and why contingency control measures were implemented;
- vii. List of subcontractors' names and registration numbers updated when changes are made; and
- viii. Names of employee(s) who successfully completed dust control training class(es), date of the class(es) that such employee(s) successfully completed, and name of the agency/representative who conducted such class(es).

[SIP Rule 310 §502.1]

- m. Records of disposal/recovery or recycling of VOCs shall be kept in accordance with applicable federal, state and local environmental protection requirements. If such records are used to demonstrate compliance against the emission limits contained within Permit Condition 1, then the Permittee shall keep records for 5 years from the date the applicable record was generated.

[County Rule 338 §305] [SIP Rule 338 §305]

47. Reporting:

The Permittee shall submit the following reports and notifications to MCAQD. For each emissions report, the Permittee shall include a statement certifying the truth, accuracy, and completeness of the information in the report signed by the responsible official.

- a. The Permittee shall submit an emission report to MCAQD (Attention: Compliance Manager) every quarter to demonstrate compliance with the emission limits of Permit Condition 1. The report shall contain actual emission estimates throughout the corresponding reporting period.

The quarterly reporting periods are:

- i. Quarter 1: January 1 through March 31
- ii. Quarter 2: April 1 through June 30
- iii. Quarter 3: July 1 through September 30
- iv. Quarter 4: October 1 through December 31

The reports shall be due 45 days following the end of each quarterly reporting period.

[County Rule 220 §302.8]

- b. Notification of commencement of construction and startup of equipment subject to 40 CFR Part 60 New Source Performance Standards shall be submitted to the Control Officer as required by 40 CFR §60.7.

- c. Low Sulfur Oil Verification:

If the Control Officer requests proof of the sulfur content of fuel burned in the engine(s), the Permittee shall submit fuel receipts, contract specifications, pipeline meter tickets, Material Safety Data Sheets (MSDS), fuel supplier information or purchase records, if applicable, from the fuel supplier, indicating the sulfur content of the fuel oil. In lieu of these, testing of the fuel oil for sulfur content to meet the applicable sulfur limit shall be permitted if so desired by the owner or operator for evidence of compliance.

[County Rule 324 §501.4] [County Rule 220 §§302.8]

- d. Deviations from Maintenance Schedule:

Sources must report any failure to perform the management practice as specified in Permit Condition 27 on the schedule required and the Federal, State or local law under which the risk was deemed unacceptable. The Report shall be submitted to the Control Officer, Attn: Compliance Division Manager, within 2 days after the date on which the maintenance operation was required to be performed. A subsequent report shall be submitted to the Control Officer within 2 days after the required maintenance operation is performed.

[County Rule 220 §§302.8] [40 CFR §63.6603(a)]

48. Performance Testing:

The Permittee shall conduct performance testing on emissions control devices as follows:

- a. Testing Requirements: Unless previously tested within the last 58 months, the Permittee shall conduct performance tests on the following equipment within 60 days after the issuance date of this permit or within 60 days after the new applicable equipment has achieved the capability to operate at its maximum production rate on a sustained basis, whichever occurs last. The testing deadline may be extended by the Control Officer for good cause, but in no case shall the testing deadline, including test report submittal, extend beyond 180 days after the permit issuance date or 180 days after the new applicable equipment has achieved the capability to operate at its maximum capacity, whichever occurs last.

The Permittee shall conduct performance tests at least every 5 years (within 58 to 62 months of the previous test) unless specified elsewhere in this Permit Condition. Testing conducted under Permit Condition 3 shall satisfy the requirements of this condition.

[Rule 270 §401][SIP Rule 27 §A]

- i. VOCs at the exhaust stacks of Fab 12, 32S, 32, and 42 Wet Scrubbers annually.
- 1) HAPs at the exhaust stacks of Fab 12, 32S, 32, and 42 Wet scrubbers - The Permittee shall satisfy the HAP performance testing requirements in this condition if choosing to comply with Performance Testing outlined in Permit Condition 2.c.i. for Cl₂, HCl, and HF if both inlet and outlet Cl₂, HCl and HF is also measured during this annual testing.
- ii. A representative sample of each group of Boilers identified below; however, the selection of the boiler to be tested shall be different than a previously tested boiler. Once all boilers have been tested, the Permittee may start retesting boilers as needed.

Boiler Grouping:	Representative Sample
Fab 12 Boilers – Group 1	One Johnston 51.7 MMBtu/hr
Fab 12 Boilers – Group 2	Three Superior 52.5 MMBtu/hr
Fab 32S Boilers – Group 3	Four Johnston 31.5 MMBtu/hr
Fab 32S Boilers – Group 4	One Johnston 42 MMBtu/hr
Fab 32 Boilers – Group 5	One Johnston 10.5 MMBtu/hr
Fab 42 Boilers – Group 6	Six Cleaver Brooks 27.62 MMBtu/hr
Fab 42 Boilers – Group 7	Two Cleaver Brooks 14.3 MMBtu/hr

The selection of the boiler to be tested from each group may initially be requested by the Permittee and included in the test protocol. However, MCAQD reserves the right to modify any boiler selection as warranted.

- iii. One of the TRMX Treatment System(s); however, the selection of the system to be tested shall be different than a previously tested TRMX Treatment System. Once all TRMX Treatment Systems have been tested, the Permittee may start retesting TRMX Treatment Systems as needed. The Selection of the TRMX Treatment Systems to be tested, out of the systems currently on site, may initially be requested by the Permittee and included in the test protocol. However, MCAQD reserves the right to modify any TRMX Treatment System selection as warranted
- 1) The Permittee shall test any new TRMX System brought online for the first time within 60 days after it has achieved the capability to operate at its maximum production rate on a sustained basis.
 - 2) The Permittee shall measure the NO_x emissions from the exhaust of the TRMX Treatment System using EPA Test Method 7E.
 - 3) If the results of testing of the TRMX Treatment System exceed 0.57 lbs/hr NO_x, then the Permittee shall submit a permit modification to revise emission limits and standards taken to avoid classification as a Title V source for NO_x.

[County Rule 270]

- b. Additional Testing Requirements for RCTO VOCs if EFs, developed via Intel testing of process tools and control equipment, are not used per Permit Condition 2: The Permittee shall start conducting

exhaust stack performance testing on the exhaust stacks (both concentrator and oxidizer stacks) of active RCTOs receiving process exhaust stacks at Fab 12, 32S, 32, and 42 RCTOs quarterly. The first test shall be conducted in the quarter following issuance of permit V12002, Rev 0.0.0.0 in June 2014, using EPA method 25A or equivalent total hydrocarbon method. The Permittee may perform additional monitoring via FTIR or a methane/non-methane hydrocarbon analyzer to quantify the methane portion of the total hydrocarbons and subtract this portion.

[County Rule 200 §309][County Rule 270 §401][SIP Rule 27 §A]

- i. The Permittee shall estimate the average molecular weight of compounds in the VOC inlet stream to each Fab Oxidizer in the testing protocol submitted to MCAQD for the first and third quarter tests. During the first year after Permit issuance, the Permittee shall validate this average molecular weight using either EPA Method 18 or FTIR to determine as many hydrocarbon compounds present in the inlet stream of the RCTO as possible.
 - 1) If the average hydrocarbon molecular weight determined using EPA Method 18 or FTIR is greater than $\pm 25\%$ the estimated average molecular weight presented by the source in the testing protocol, then the Permittee shall repeat the test during the next performance test. In the absence any testing, the Permittee may assume the worst case VOC-to-carbon ratio as an alternative.
 - 2) During the testing period after the issuance of permit V12002 rev 0.0.0.0 in June 2014, the Permittee shall analyze each quarterly performance test for variability. The Permittee shall analyze stack test data results (after being normalized using the PI) to ensure variability is less than or equal to the presented values. Variability shall take into account total site wide VOC emissions; however, only actual VOC stack test results shall be used in the variability calculation. The Permittee shall extrapolate stack test data from the first year's quarterly testing until a full year of test data is available.

If quarterly testing shows less than or equal variability than what is presented in the table below, then the Permittee may reduce the frequency of testing to annually. If the results of two subsequent performance tests exhibit variability greater than the values presented below, then the Permittee shall resume quarterly performance testing until the results of two subsequent tests show less than or equal variability.

<u>12-month rolling total VOC Emissions¹</u>	Variability
Less than 70 tons/year	42%
Between 70 to 80 tons/year	25%
Between 80 to 90 tons/year	10%

¹ These values include all site-wide monthly VOC emissions and shall include all sources of VOC emissions as required in Permit Condition 47.a.

Variability shall be calculated as follows:

$$\text{Variability (\%)} = \frac{\text{New Test Data (PI}_{new}) - \text{Previous Test Data (PI}_{old})}{\text{Previous Test Data (PI}_{old})} \times 100\%$$

If the total contribution of VOC from test data is lower than 25 tons per year from all RCTOs, the Permittee may use a variability of 42% regardless of total site-wide emissions.

[County Rule 220 §302.1d]

- c. Testing Criteria: Performance tests shall be conducted and data reduced in accordance with the test methods and procedures specified unless the Control Officer and Administrator specifies or approves minor changes in methodology to a reference method, approves the use of an equivalent test method, approves the use of an alternative method that has been determined to be acceptable for demonstrating compliance, or waives the requirement for performance tests because the Permittee has demonstrated by

other means that the source is in compliance with the standard. For NSPS facilities, only EPA has the authority to waive initial testing requirements.

[County Rule 270 §402][SIP Rule 27 §B] [40 CFR §60.8(a)]

- d. Test Methods: Sampling sites and velocity traverse points shall be selected in accordance with EPA Test Method 1 or 1A. The gas volumetric flow rate shall be measured in accordance with EPA Test Method 2, 2A, 2C, 2D, 2F, 2G or 19. The dry molecular weight shall be determined in accordance with EPA Test Method 3, 3A or 3B. The stack gas moisture shall be determined in accordance with EPA Test Method 4. These methods must be performed, as applicable, during each test run unless an alternate method is approved by the Control Officer

[County Rule 270 §301.1][SIP Rule 27 §B] [40 CFR §60.8(b)]

- e. Operating Conditions: Performance tests shall be conducted under representative operating conditions and all control equipment shall be operated during testing in accordance with the most recently submitted O&M Plan or according to its operations manual if no O&M Plan is required. Permittee shall make available to the Control Officer any records necessary to determine appropriate conditions for performance tests. Operations during periods of startup, shutdown, and equipment malfunction shall not constitute representative conditions for performance tests unless otherwise specified in the applicable standard or permit conditions.

[County Rule 270 §403]

- f. Monitoring Requirements: The Permittee shall record all control equipment information that is necessary to document operating conditions during the test and explain why the conditions represent normal operation. Control equipment operational parameters shall be monitored and recorded at least once every 30 minutes during each of the required test runs and documented in the test report. The operational parameters monitored shall be capable of indicating that the control equipment is operating within the permitted limits, both during and after the performance tests.

[County Rule 270 §301.1][SIP Rule 27 §B][40 CFR §60.8(c)]

- g. Test Protocol Submittal: The Permittee shall submit a separate test protocol for each performance test to MCAQD for review and approval at least 30 days prior to each performance test. The test protocol shall be prepared in accordance with MCAQD's "Air Quality Performance Test Guidelines for Compliance Determination in Maricopa County" dated August 11, 2014 and the requirements of this Permit. A completed copy of MCAQD's "Test Protocol Submittal Form" shall accompany each test protocol.

[County Rule 270 §301.1][SIP Rule 27 §B]

- h. Notice of Testing: The Permittee shall notify MCAQD in writing at least two weeks in advance of the actual date and time of each performance test so that MCAQD may have a representative attend.

[Rule 270 §404] [40 CFR §60.8(d)]

- i. Testing Facilities Required: The Permittee shall install any and all sample ports or platforms necessary to conduct the performance tests, provide safe access to any platforms and provide the necessary utilities for testing equipment.

[County Rule 270 §405][SIP Rule 42] [40 CFR §60.8(d)]

- j. Minimum Testing Requirements: Each performance test shall consist of three separate test runs with each test run being at least one hour in duration unless otherwise specified in the applicable standard or in this permit. The same test methods shall be conducted for both the inlet and outlet measurements, if applicable, which must be conducted simultaneously. Emissions rates, concentrations, grain loadings, and/or efficiencies shall be determined as the arithmetic average of the values determined for each individual test run. Performance tests may only be stopped for good cause, which includes forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances beyond the Permittee's control. Termination of a performance test without good cause after the first test run has commenced shall constitute a failure of the performance test.

[County Rule 270 §406] [40 CFR §60.8(e)]

- k. Test Report Submittal: The Permittee shall complete and submit a separate test report for each performance test to MCAQD within 30 days after the completion of testing. The test report shall be

prepared in accordance with MCAQD's "Air Quality Performance Test Guidelines for Compliance Determination in Maricopa County" dated August 11, 2014. A completed copy of MCAQD's "Test Report Submittal Form" shall accompany each test report.

[County Rule 270 §301.1][SIP Rule 27 §B] [40 CFR §60.8(f)]

- l. Compliance with Emission Limits: Compliance with allowable emission limits and standards shall be determined by the performance tests specified in this permit. If test results do not demonstrate compliance with the requirements of these permit conditions, the Permittee shall make the necessary repairs and/or adjustments to the equipment and demonstrate compliance through retesting. This will not nullify the fact that test results did not demonstrate compliance with the requirements of the permit conditions or nullify any violations that may result from this noncompliance. In addition to compliance demonstrations, test results shall be used for annual emissions inventory purposes if the Permittee is required to complete an emissions inventory survey.

[County Rule 270 §407]

- m. Correspondence: All test extension requests, test protocols, test date notifications, and test reports required by this permit shall be submitted to MCAQD and addressed to the attention of the Performance Test Evaluation Supervisor.

[County Rule 270 §301.1][SIP Rule 27 §B]

- n. RCTO:

- i. The Permittee shall measure the VOC concentration in the RCTO and BSSW Thermal Oxidizer inlet and exhaust streams to demonstrate compliance with the requirements of Permit Condition 8.a of this Permit. If the Permittee is demonstrating compliance with the outlet VOC ppm standard of Permit Condition 8.a.i.4), only the exhaust streams need to be tested. Testing shall also demonstrate compliance with all applicable VOC emission limits of these Permit Conditions.
- ii. The Permittee shall measure the concentrations of NO_x and CO in the thermal oxidizer exhaust stream. Testing shall demonstrate compliance with all applicable NO_x and CO concentrations and/or emission limits of these Permit Conditions.
- iii. VOC testing shall be conducted in accordance with ASTM D6348-12, EPA Test Method 320, 25 or 25A. Testing to quantify exempt compounds, such as methane, as well as the VOC-to-Carbon ratio conversion shall be conducted in accordance with EPA Test Method 18 methane/non-methane hydrocarbon analyzer, or an alternative test method approved by the Control Officer. NO_x testing shall be conducted in accordance with EPA Test Method 7E. CO testing shall be conducted in accordance with EPA Test Method 10.
- iv. The Permittee shall record the combustion chamber temperature and combustion chamber set-point temperature during the performance test. These and any additional operational parameters shall be identified in the test protocol and recorded during testing. Following the performance test, the RCTO shall be operated at or above the combustion chamber set-point temperature range used to demonstrate compliance.

- o. Wet Scrubbers:

- i. Scrubber: The Permittee shall measure the HCl concentration in the inlet and exhaust stream of the scrubber to demonstrate a minimum removal efficiency of 90% by weight. Testing shall demonstrate compliance with all applicable HCl concentration and/or emission limits of these Permit Conditions.
- ii. In the event that the emissions testing required by this Condition for the wet scrubber systems does not demonstrate the required removal efficiency, as an alternative, the Permittee shall demonstrate compliance in accordance with the MCAQD guidance document "Optional Compliance Demonstrations Procedure, A Guideline for Semiconductor Industry, Part I, Acid/Base Emissions & Wet Scrubber Performance Test" dated May 4, 2001.
- iii. Cl₂, HCl and HF testing shall be conducted in accordance with EPA Test Methods 26, 26A Method 320, ASTM D6348-12 or other test method as approved by the Control Officer.

- iv. The Permittee shall quantify emissions of VOCs in the Fab scrubbed exhaust stacks using FTIR. VOCs detected will be quantified and added to the site-wide total VOC emissions unless Intel can demonstrate to MCAQD that the VOCs emitted through the scrubber exhaust are already accounted for by mass balance as fugitives.
- v. The Permittee shall record the scrubber media differential pressure, scrubber recirculation flow rate and scrubber liquid pH level during the performance test. These and any additional operational parameters shall be identified in the test protocol and recorded during testing.
- p. Boilers:
 - i. Testing shall measure the concentrations of NO_x and CO in the boiler exhaust stream. Testing shall demonstrate compliance with all applicable NO_x and CO concentrations and/or emission rate requirements of Permit Condition 33. NO_x and CO test results shall be corrected to 3% O₂.
 - ii. NO_x testing shall be conducted in accordance with EPA Test Method 7E. CO testing shall be conducted in accordance with EPA Test Method 10.
 - iii. The Permittee shall record the steam temperature, steam pressure and percent fire during the performance test for steam boilers in Fab 12. These and any additional operational parameters shall be identified in the test protocol and recorded during testing.
- q. Generators:
 - i. Generators: If the Permittee chooses not to use either manufacturer's EF data or AP-42 EFs, then the Permittee shall test each generator.
 - ii. The Permittee shall test each unit for mass emission rates for NO_x, carbon monoxide and PM10 (if applicable) within 60 days after the issuance date of this permit or within 60 days after the new applicable equipment has achieved the capacity to operate at its maximum production rate on a sustained basis, whichever occurs last. MCAQD may accept one or more tests as being representative for other substantially similar generators. This requirement to test the emergency generators may be waived if the Permittee meets Permit Condition 48.q.i.
- r. Authority: The above testing requirements represent the minimum level of testing to monitor for compliance with the emission limits in this permit. Nothing in this section shall prevent the Control Officer from requiring additional performance testing as deemed necessary to ensure permit compliance and protection of the public health and welfare.

[County Rule 200 §309][County Rule 270 §402.5]

49. Optional Compliance Demonstrations:

The following Optional Compliance Demonstration documents are incorporated by reference into this Title V Air Quality Permit:

- a. A Guideline for Semiconductor Industry Part I, Acid/Base Emissions and Wet Scrubber Performance Test (May 4, 2001).
- b. A Guideline for Semiconductor Industry Part II, Procedure to Determine Requirements for Operation and Maintenance Plan Point-of-Use/Exhaust Condition Units (June 4, 2001).
- c. A Guideline for Semiconductor Industry Part III, Volatile Organic Compounds (VOC) Abatement Performance Test (November 12, 2001).
- d. A Guideline for Semiconductor Industry Part IV, Insignificant and Trivial Activities (March 26, 2002).

GENERAL CONDITIONS

50. Posting of Permit:

This Permit shall be posted in a clearly visible and accessible location on the site where the equipment is installed.

[Rule 200 §312]

51. Compliance:

- a. The issuance of any Permit or Permit revision shall not relieve the Permittee from compliance with any Federal laws, Arizona laws, or the County or SIP Rules, nor does any other law, regulation or permit relieve the Permittee from obtaining a Permit or Permit revision required under the County Rules.
[Rule 200 §309; Rule 220 §406.3][Locally Enforceable Only]
- b. The Permittee shall comply with all conditions of this Permit including all applicable requirements of Federal laws, Arizona laws, and Maricopa County Air Pollution Control Rules and Regulations now in effect and as amended in the future. Any Permit noncompliance is grounds for enforcement action, Permit termination or revocation, or for denial of a renewal application. In addition, non-compliance with any federally enforceable requirements constitutes a violation of the Clean Air Act.
[A.A.C R18-2-306.A.8.a][Locally Enforceable Only]
- c. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with these Permit Conditions.
[Rule 220 §302.10, 11] [A.A.C. R18-2-306.A.8.b] [Locally Enforceable Only]
- d. Rights and Privileges: This Permit does not convey any property rights or exclusive privilege of any sort.
[Rule 220 §302.12] [Locally Enforceable Only]
- e. Fees: The Permittee shall pay all fees to the Control Officer in accordance with Rule 280. No permit or permit revision is valid until the applicable permit fee has been received and until the permit is issued by the Control Officer.
[Rule 200 §409; Rule 280 §302] [ARS 49-480(D)] [SIP Rule 28]

52. Malfunctions, Emergency Upsets, and Excess Emissions:

An affirmative defense of an emergency, excess emission, and/or during startup and shutdown shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence as outlined in Rule 130 for emergencies and Rule 140 for excess emissions.

[Rule 130 §§201, 400; Rule 140 §§400, 500] [SIP Rule 140]

53. Revision / Reopening / Revocation:

- a. The Permit may be revised, reopened, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a permit revision, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any Permit Condition.
[Rule 220 §302.11][Locally Enforceable Only]
- b. The Permittee may make any physical change or change in the method of operation without revising the source's permit, unless the change is specifically prohibited in the source's permit or is a change described in Rule 220 §403.2. A change that does not require a permit revision may still be subject to requirements per Rule 220 §404.

[County Rule 220 §403.1]

54. Records:

- a. The Permittee shall furnish information that the Control Officer may request in writing to determine whether cause exists for revising, revoking and reissuing this permit, or terminating this permit, or to determine compliance with this permit. The information shall be provided in a timeframe specified by the Control Officer. Upon request, the Permittee shall also furnish to the Control Officer copies of records required to be kept by this Permit. For information claimed to be confidential, the Permittee shall furnish a copy of such records directly to the Administrator along with a claim of confidentiality.
[Rule 220 §302.13] [SIP Rule 40]
- b. If the Permittee fails to submit any relevant facts or has submitted incorrect information in a permit application, the Permittee shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary facts or corrected information. In addition, the Permittee shall provide additional information as necessary to address any requirements that become applicable to the source after the date a complete application is filed but prior to release of a proposed permit. Willful misrepresentation of facts in a permit application is cause for revocation or denial of a permit.

[Rule 220 §§301.5, 301.6] [Locally Enforceable Only]

55. Right to Entry:

- a. The Control Officer during reasonable hours, for the purpose of enforcing and administering County or SIP Rules or the Clean Air Act, or any provision of the Arizona Revised Statutes relating to the emission or control prescribed pursuant thereto, may enter every building, premises, or other place, except the interior of structures used as private residences. Every person is guilty of a petty offense under ARS 49-488 who in any way denies, obstructs or hampers such entrance or inspection that is lawfully authorized by warrant.
- b. The Permittee shall allow the Control Officer or his designated representatives, upon presentation of proper credentials (e.g., Maricopa County Air Quality Department identification) and other documents as may be required by law, to:
 - i. Enter upon the Permittee's premises where a source is located or emissions-related activity is conducted, or where records are required to be kept pursuant to the conditions of the permit;
 - ii. Have access to and copy, at reasonable times, any records that are required to be kept pursuant to the conditions of the permit;
 - iii. Inspect, at reasonable times, any sources, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required pursuant to this permit;
 - iv. Sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with the Permit or other applicable requirements; and
 - v. To record any inspection by use of written, electronic, magnetic, and photographic media.

[Rule 100 §105; Rule 220 §302.17-21] [SIP Rule 43]

56. Severability:

The rules, paragraphs, clauses, provisions, and/or sections of this Permit are severable, and, if any rule, paragraph, clause, provision, and/or section of this Permit is held invalid, the remainder of this Permit shall not be affected thereby.

[Rule 220 §302.9] [SIP Rule 80]

Cleaning Machine Operating Requirements

- Keep cover closed when parts are not being handled. (This is not required for remote reservoir cleaners.)
- Drain parts until they can be removed without dripping.
- Do not blow off parts before they have stopped dripping.
- Wipe up spills and drips as soon as possible; store used spill rags and wiping material in a covered container.
- Do not leave cloth or any absorbent materials in or on this tank.