MARICOPA COUNTY AIR QUALITY DEPARTMENT (MCAQD)
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TITLE V AIR QUALITY OPERATING PERMIT

Facility Number:	F000701	Original Issue Date:	January 11, 2016
Permit Number:	P0010018	Revision Date:	August 30, 2023
		Expiration Date:	January 31, 2021 (Permit term extended per Rule 210 §301.9)

Permittee Name:	Intel Corp – Ocotillo Campus
Mailing Address:	4500 S Dobson Road, OC4-005, Chandler, AZ 85248
Business Name:	Intel Corporation
Facility Address:	4500 S Dobson Road, Chandler, AZ 85248

Equipment and Processes Covered: Semiconductor manufacturing with CO, NO_X, VOC, PM_{10} and $PM_{2.5}$ emissions above the Title V permitting threshold.

This Permit is issued in accordance with Maricopa County Air Pollution Control Regulations, Rule 200, §301, and Arizona Revised Statutes, §49-404c and §49-480. The attached Permit Conditions are incorporated into and form an integral part of this Permit. The Permit is issued to provide regulators, site operators or owners, and members of the public, a clear picture of what the Permit holder is required to do to meet applicable requirements. As the Permit holder, you are expected to review this Permit, become familiar with its provisions and conditions and to operate in conformance with them. This Permit is an enforceable document. Failure to conform to the emission limits and any other condition contained in the Permit is a violation of law and will form the basis of enforcement action by the department which may include civil or criminal sanctions.

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.

DocuSigned by:
Philip McNeely
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Philip A. McNeely, R.G.
Maricopa County Air Quality Control Officer

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In accordance with Maricopa County Air Pollution Control Rules and Regulations (Rules), Rule 210 §302.2, all Conditions of this Permit are federally enforceable unless they are identified as being locally enforceable only. However, any Permit Condition identified as locally enforceable only will become federally enforceable if, during the term of this Permit, the underlying requirement becomes a requirement of the Clean Air Act (CAA) or any of the CAA's applicable requirements.

All federally enforceable terms and conditions of this Permit are enforceable by the Administrator of the United States Environmental Protection Agency (Administrator or Administrator of the USEPA hereafter) and citizens under the CAA.

Any cited regulatory paragraphs or section numbers refer to the version of the regulation that was in effect on the first date of public notice of the applicable Permit Condition unless specified otherwise. In the event the rules and regulations are amended during the term of this Permit, the amended rules and regulations shall apply.

SPECIFIC CONDITIONS

1. Allowable Source-Wide HAP Emissions Limitations:

   a. The Permittee shall not allow source-wide HAP emissions into the atmosphere to exceed any of the following limits:

Pollutant	12-Month Rolling Total
Total Hazardous Air Pollutants (HAPs)	22 tons
Any Single HAP	9 tons

[County Rule 210 § 301]

   b. The HAP emissions limits established in Permit Condition 1.a above include both fugitive and non-fugitive emissions.

[County Rule 201 § 301]

   c. The Permittee shall maintain records of the 12-month rolling total emissions to demonstrate compliance with the source-wide HAP emission limits of Permit Condition 1.a by calculating and recording the 12-month rolling total emissions using the methodologies and emission factors (EFs) outlined below. The 12-month rolling total HAP emissions shall be calculated for each pollutant listed in Permit Condition 1.a 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 40.a or at the request of the Control Officer. For process emissions not outlined below, the Permittee shall use the methodology most similar to the methodology submitted in the permit application or in writing to the Control Officer.

[County Rule 210 §302.1(c)(2)][A.A.C. R18-2-306.A.3.c]

      i. Emergency Engine HAP Emissions:

      HAP emissions from emergency engines shall be calculated using EFs from EPA AP-42 Chapters 3.3 and 3.4: Emission Factors for Diesel Engines:

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

      Where,
      E_i = Emission of Species i, lb/month
      R = Brake Horsepower Rating of Engine
      U = Usage of Engine, hours/month
      F_i = Emission Factor for Species i, lb/hp-hr

      ii. Natural Gas Combustion HAP Emissions:

HAP emissions from any natural gas combustion unit shall be calculated based on appropriate EFs from EPA AP-42 Chapter 1.4: Natural Gas Combustion.

iii. Semiconductor Manufacturing HAPs:

HAP emissions from semiconductor manufacturing shall be determined using the following calculation methods:

$$\begin{aligned} &Monthly\ HAP\ Emissions \\ &= (TR\ HAPs) \times PI + (EF\ HAPs) + (RCTO\ HAPs) + (FUG\ HAPs) + (UC\ HAPs) \end{aligned}$$

Where:

1) TR (Test Result) HAPs: Emissions of HCl and HF shall be determined through stack testing at the outlet of each Fab wet acid scrubber using the test methods outlined in Permit Condition 41.a.i. The Permittee has the ability to re-test at any time and utilize the latest stack test data in emission calculations so long as proper testing protocols are followed.

2) PI (Production Index): Performance TRs shall be adjusted monthly to account for changes in the manufacturing levels using the PI (outlined below).

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

3) EF HAPs: For HAPs other than HCl and HF, the Permittee shall utilize compound specific EFs based on internal Intel testing of process tools and control equipment. These EFs will be applied to the total quantity of each compound used to calculate emissions.

4) RCTO HAPs: HAPs that are VOCs exhausted by VOC abatement units shall either be tested via the FTIR method or calculated by using mass balance, engineering calculation, or EFs.

5) FUG HAPs: Fugitive HAPs used in fabs, but not emitted directly from process tools that are not tested, shall be calculated by using mass balance, engineering calculation, or EFs submitted to MCAQD annually, 45 days following the end of the first quarterly reporting period as required by Permit Condition 40.a. Fugitive emissions are defined, under County Rule 100 §200.58, as those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening.

[County Rule 210 § 302.1(c)(2)]

2. Plantwide Applicability Limitations (PALs):

a. The Permittee shall not allow source-wide emissions into the atmosphere to exceed any of the following limits until Fab 52 and/or Fab 62 become operational:

Pollutant	12-Month Rolling Total
Volatile Organic Compounds (VOCs)	175 tons
Oxides of Nitrogen (NO_X)	198 tons
Carbon Monoxide (CO)	388 tons
Particulate Matter equal to or less than 10 Microns (PM_{10})	125 tons
Particulate Matter equal to or less than 2.5 Microns ($PM_{2.5}$)	119 tons
Particulate Matter (PM)	159 tons
Sulfur Dioxide (SO_2)	61 tons
Fluorides	24 tons

[County Rule 240 §§ 304.8.a and 305.1.d][40 CFR §§ 51.165(f)(1)(i), (f)(4)(i), and (f)(7)(i); 40

CFR §§ 52.21(aa)(1)(i), (aa)(4)(i), and (aa)(7)(i)]

b. The Permittee shall submit a written notification of the startup date for Fab 52 and/or Fab 62 to MCAQD using the AQD Portal. Upon startup of Fab 52 and/or Fab 62, the Permittee shall not allow source-wide emissions into the atmosphere to exceed any of the following:

Pollutant	12-Month Rolling Total
Volatile Organic Compounds (VOCs)	335 tons
Oxides of Nitrogen (NO_X)	352 tons
Carbon Monoxide (CO)	507 tons
Particulate Matter equal to or less than 10 Microns (PM_{10})	125 tons
Particulate Matter equal to or less than 2.5 Microns ($PM_{2.5}$)	119 tons
Particulate Matter (PM)	159 tons
Sulfur Dioxide (SO_2)	61 tons
Fluorides	24 tons
Greenhouse Gases (GHG)	1,403,587 tons

[Rule 240 §§ 304.4(b), 304.8.a, and 305.1.d][40 CFR §§ 51.165(f)(1)(i), (f)(4)(i), and (f)(7)(i); 40 CFR §§ 52.21(aa)(1)(i), (aa)(4)(i), and (aa)(7)(i)][Rule 210 § 302.1(e)]

c. The Permittee shall comply with offset and emission reduction requirements for the Fab 52/Fab 62 Project authorized by MCAQD Permit P0006742 by using 204.3 tons of VOC Emission Reduction Credits and 189.5 tons of NO_x Emission Reduction Credits that meet the provisions contained in 40 CFR 51.165(a)(3)(ii)(A) through (D) and 40 CFR 51.165(a)(3)(ii)(G) and have been certified by the Control Officer. Emission Reduction Credits are specified in Appendix C. All such emission reductions claimed as offset credits shall have been implemented prior to commencing operation of the Fab 52/Fab 62 Project.

[Rule 240 §§ 304.2 and 304.4]

d. The PALs in Permit Condition 2.a. and 2.b. above include fugitive emissions, to the extent quantifiable, from all emissions units that emit or have the potential to emit the PAL pollutant.

[County Rule 240 §§ 304.9 and 305.1.d] [40 CFR § 51.165(f)(4)(i)(D) and 40 CFR § 52.21(aa)(4)(i)(d)]

e. *PAL Effective Period*. The PALs for PM, PM_{10}, $PM_{2.5}$, SO_2, and Fluorides in Permit Condition 2.a and 2.b above shall have an effective date of December 17, 2018 and an expiration date of December 17, 2028. The PALs for VOCs, NOx, and CO, in Permit Condition 2.b., and GHG in Permit Condition 2.b above shall have an effective date that will begin on the date identified in the written notification required in Permit Condition 2.b and will expire 10 years from that date.

[County Rule 240 §§ 304.8.a and 305.1.d] [40 CFR § 51.165(f)(4)(i)(F), (f)(7)(ii), and (f)(8)(i); 40 CFR § 52.21(aa)(4)(i)(f), (aa)(7)(ii), and (aa)(8)(i)]

f. For each month during the PAL effective period after the first 12 months of the effective date, the Permittee shall show that the sum of the monthly emissions for each emissions unit under a PAL for the previous 12 consecutive months is less than that PAL (a 12-month average, rolled monthly). For each month during the first 11 months from the PAL effective date, the Permittee shall show that the sum of the preceding monthly emissions from the PAL effective date for each emissions unit under a PAL shall be less than that PAL.

[County Rule 240 §§ 304.9 and 305.1.d] [40 CFR § 51.165(f)(4)(i)(A) and 40 CFR § 52.21(aa)(4)(i)(a)]

g. The Permittee shall monitor all emissions units in accordance with the provisions under Permit Condition 3.f below. Monitoring systems for emissions units identified at the time of permit issuance are specified in Appendix B. The Permittee shall update monitoring systems as necessary to reflect new information or to address new or modified emissions units after permit

issuance. All such updates shall be reported in accordance with Permit Condition 3.h.i below. [County Rule 240 §§ 304.8.a and 305.1.d] [40 CFR § 51.165(f)(7)(vii) and (x); 40 CFR § 52.21(aa)(7)(vii) and (x)]

h. The Permittee shall use the calculation procedures specified in Appendix B for emissions units identified at the time of permit issuance to convert the monitoring system data to monthly emissions and annual emissions based on a 12-month rolling total for each month and record such calculations as required by Permit Condition 3.g below. The Permittee shall update calculation procedures as necessary to reflect new information or to address new or modified emissions units after permit issuance. All such updates shall be reported in accordance with Permit Condition 3.h.i below.
[County Rule 240 §§ 304.8.a and 305.1.d] [40 CFR § 51.165(f)(7)(vi) and (x); 40 CFR § 52.21(aa)(7)(vi) and (x)]

i. Emission calculations for compliance purposes must include emissions from startups, shutdowns, and malfunctions.
[County Rule 240 §§ 304.8.a and 305.1.d] [40 CFR § 51.165(f)(7)(iv) and 40 CFR § 52.21(aa)(7)(iv)]

3. PAL General Requirements:

a. *Applicability*. Provided the Permittee maintains its total source-wide emissions below the PALs in Permit Condition 2.a and 2.b, meets the applicable requirements in 40 CFR § 51.165(f)(1) through (15) and 40 CFR § 52.21(aa)(1) through (15), and complies with the PAL permit, any physical change or change in the method of operation at the source:

i. Is not a major modification for the PAL pollutants;

ii. Does not have to be approved through the major NSR programs under County Rule 240; and

iii. Is not subject to the provisions in 40 CFR § 51.165(a)(5)(ii), 40 CFR § 52.21(r)(4), or County Rule 240 § 304.7 (restrictions on relaxing enforceable emission limitations that a major stationary source used to avoid applicability of the major NSR programs).
[County Rule 240 §§ 304.8.a and 305.1.d] [40 CFR § 51.165(f)(1)(ii) and 40 CFR § 52.21(aa)(1)(ii)]

b. Except as provided in Permit Condition 3.a.iii, the Permittee shall continue to comply with all applicable requirements, emission limitations, and work practice requirements that were established prior to the effective date of the PALs.
[County Rule 240 §§ 304.8.a and 305.1.d] [40 CFR § 51.165(f)(1)(iii) and 40 CFR § 52.21(aa)(1)(iii)]

c. *PAL Permit Reopening*.

i. During the PAL effective period, the Control Officer must reopen the PAL permit to:

1) Correct typographical/calculation errors made in setting a PAL or reflect a more accurate determination of emissions used to establish a PAL;

2) Reduce a PAL if the Permittee creates creditable emissions reductions for use as offsets under 40 CFR § 51.165(a)(3)(ii); and

3) Revise a PAL to reflect an increase in the PAL as provided under Permit Condition 3.e below.

ii. The Control Officer has discretion to reopen the PAL permit for the following:

1) Reduce a PAL to reflect newly applicable Federal requirements (for example, NSPS) with compliance dates after the PAL effective date;

2) Reduce a PAL consistent with any other requirement, that is enforceable as a practical

matter, and that may be imposed under a State Implementation Plan; and

3) Reduce a PAL if the Control Officer determines that a reduction is necessary to avoid causing or contributing to a NAAQS or PSD increment violation, or to an adverse impact on an air quality related value that has been identified for a Federal Class I area by a Federal Land Manager and for which information is available to the general public.

iii. Except for the permit reopening in Permit Condition 3.c.i.1) above for the correction of typographical/calculation errors that do not increase a PAL level, all other reopenings shall be carried out in accordance with the public participation requirements of 40 CFR § 51.165(f)(5) and 40 CFR § 52.21(aa)(5).

[County Rule 240 §§ 304.8.a and 305.1.d] [40 CFR § 51.165(f)(8)(ii) and 40 CFR § 52.21(aa)(8)(ii)]

d. *PAL Renewal and Expiration.* Any PAL that is not renewed in accordance with the procedures in paragraph 40 CFR §51.165 (f)(10) for non-attainment pollutants and in paragraph 40 CFR §52.21 (aa)(10) for pollutants in attainment shall expire at the end of the PAL effective period and the Permittee must follow the requirements listed in 40 CFR §51.165 (aa)(9)(i) through (v) for non-attainment pollutants and 40 CFR §52.21 (f)(9)(i) through (v) for pollutants in attainment. If the Permittee plans to renew any of the PALs listed in Permit Condition 2.a, then a PAL renewal application must be submitted at least 6 months prior to, but not earlier than 18 months from the date of permit expiration. If the Permittee applies to renew any of the PALs, then the applicable PALs shall remain in effect until the revised PAL permit is issued by MCAQD.

[County Rule 240 §§ 304.8.a and 305.1.d] [40 CFR §51.165(f)(7)(iii), 40 CFR §52.21(aa)(7)(iii)]

e. *Increasing a PAL during the PAL Effective Period.* If the Permittee applies for an increase in the PAL level for any of the pollutants listed in Permit Condition 2.a during the 10 year effective period of the PAL, the Permittee shall comply with the provisions of 40 CFR §52.21 (aa)(11)(A through D) for pollutants in attainment and 40 CFR §51.165 (f)(11)(A through D) for non-attainment pollutants.

[County Rule 240 §§ 304.8.a and 305.1.d] [40 CFR §51.165(f)(11), 40 CFR §52.21(aa)(11)]

f. *Monitoring Requirements for PALs*.

i. *General requirements*.

1) The Permittee shall use monitoring systems that accurately determine source-wide emissions of PAL pollutants in terms of mass per unit of time. Such monitoring systems must be based on sound science and meet generally acceptable scientific procedures for data quality and manipulation. Additionally, the information generated by such systems must meet minimum legal requirements for admissibility in a judicial proceeding to enforce the PAL permit.

2) A PAL monitoring system must employ one or more of the four general monitoring approaches meeting the minimum requirements set forth in Permit Condition 3.f.ii.1) through 4) below and must be approved by the Control Officer.

3) Notwithstanding Permit Condition 3.f.i.2) above, the Permittee may also employ an alternative monitoring approach that meets Permit Condition 3.f.i.1) above if approved by the Control Officer.

4) Failure to use a monitoring system that meets the requirements of this section renders the PAL invalid.

ii. *Minimum Performance Requirements for Approved Monitoring Approaches*. The following are acceptable general monitoring approaches when conducted in accordance with the minimum requirements in Permit Condition 3.f.iii through viii below:

1) Mass balance calculations for activities using coatings or solvents;

2) CEMS;

3) CPMS or PEMS; and

4) Emission Factors.

iii. *Mass Balance Calculations*. If using a mass balance calculations to monitor PAL pollutant emissions from activities using coating or solvents, the Permittee shall meet the following requirements:

1) Provide a demonstrated means of validating the published content of the PAL pollutant that is contained in or created by all materials used in or at the emissions unit;

2) Assume that the emissions unit emits all of the PAL pollutant that is contained in or created by any raw material or fuel used in or at the emissions unit, if it cannot otherwise be accounted for in the process; and

3) Where the vendor of a material or fuel, which is used in or at the emissions unit, publishes a range of pollutant content from such material, the Permittee must use the highest value of the range to calculate the PAL pollutant emissions unless the Control Officer determines there is site-specific data or a site-specific monitoring program to support another content within the range.

iv. *CEMS*. If using CEMS to monitor PAL pollutant emissions, the Permittee shall meet the following requirements:

1) CEMS must comply with applicable Performance Specifications found in 40 CFR part 60, Appendix B; and

2) CEMS must sample, analyze and record data at least every 15 minutes while the emissions unit is operating.

v. *CPMS or PEMS*. If using CPMS or PEMS to monitor PAL pollutant emissions, the Permittee shall meet the following requirements:

1) The CPMS or the PEMS must be based on current site-specific data demonstrating a correlation between the monitored parameter(s) and the PAL pollutant emissions across the range of operation of the emissions unit; and

2) Each CPMS or PEMS must sample, analyze, and record data at least every 15 minutes, or at another less frequent interval approved by the Control Officer, while the emissions unit is operating.

vi. *Emission Factors*. If using emission factors to monitor PAL pollutant emissions, the Permittee shall meet the following requirements:

1) All emission factors shall be adjusted, if appropriate, to account for the degree of uncertainty or limitations in the factors' development;

2) The emissions unit shall operate within the designated range of use for the emission factor, if applicable; and

3) If technically practicable, for any significant emissions unit that relies on an emission factor to calculate PAL pollutant emissions, the Permittee shall conduct validation testing to determine a site-specific emission factor within 6 months of PAL permit issuance, unless the Control Officer determines that testing is not required.

vii. The Permittee must record and report maximum potential emissions without considering enforceable emission limitations or operational restrictions for an emissions unit during any period of time that there is no monitoring data, unless another method for determining emissions during such periods is specified in the PAL permit.

viii. *Re-validation*. All data used to establish the PAL pollutant must be re-validated through performance testing or other scientifically valid means approved by the Control Officer. Such testing must occur at least once every 5 years after issuance of the PAL.

[County Rule 240 §§ 304.8.a and 305.1.d] [40 CFR § 51.165(f)(12) and 40 CFR § 52.21(aa)(12)]

g. *Recordkeeping Requirements*.

i. The Permittee shall retain a copy of all records necessary to determine compliance with this PAL permit and any requirement of 40 CFR § 51.165(f) and 40 CFR § 52.21(aa), including a determination of each emissions unit's 12-month rolling total emissions, for 5 years from the date of such record.

ii. The Permittee shall retain a copy of the following records for the duration of the PAL effective period plus 5 years:

1) A copy of the PAL permit application and any applications for revisions to the PAL; and

2) Each annual certification of compliance pursuant to Permit Condition 40.c and the data relied on in certifying the compliance.

[County Rule 240 §§ 304.8.a and 305.1.d] [40 CFR § 51.165(f)(13) and 40 CFR § 52.21(aa)(13)]

h. *Reporting and Notification Requirements*. The Permittee shall submit semi-annual monitoring reports and prompt deviation reports to the Control Officer in accordance with Permit Conditions 40.b and 57.c, respectively. Such reports shall meet the requirements in Permit Condition 3.h.i through iii below.

i. *Semi-Annual Report*. The semi-annual report shall be submitted to the Control Officer within 30 days of the end of each reporting period. This report shall contain the information required in Permit Condition 3.h.i.1) through 7) below.

1) The identification of the Permittee and the permit number.

2) Total annual emissions (tons/year) based on a 12-month rolling total for each month in the reporting period recorded pursuant to Permit Condition 3.g.i above.

3) All data relied upon, including, but not limited to, any Quality Assurance or Quality Control data, in calculating the monthly and annual PAL pollutant emissions.

4) A list of any emissions units modified or added during the preceding 6-month period, and identification and description of any updates to monitoring systems and calculation procedures used to demonstrate compliance with the PALs in Permit Condition 2.a and 2.b. Any such updates to monitoring systems must meet the requirements in Permit Condition 3.f above.

5) The number, duration, and cause of any deviations or monitoring malfunctions (other than the time associated with zero and span calibration checks), and any corrective action taken.

6) A notification of a shutdown of any monitoring system, whether the shutdown was permanent or temporary, the reason for the shutdown, the anticipated date that the monitoring system will be fully operational or replaced with another monitoring system, and whether the emissions unit monitored by the monitoring system continued to operate, and the calculation of the emissions of the pollutant or the number determined by method included in Appendix B or otherwise provided in accordance with Permit Condition 3.f.vii.

7) A signed statement by the responsible official certifying the truth, accuracy, and completeness of the information provided in the report.

ii. *Deviation report*. The Permittee shall promptly submit reports of any deviations or

exceedance of the PAL requirements, including periods where no monitoring is available. Such deviation reports shall be submitted within the time limits prescribed by Permit Condition 57.c and shall contain the following information:

1) The identification of the Permittee and the permit number;

2) The PAL requirement that experienced the deviation or that was exceeded;

3) Emissions resulting from the deviation or the exceedance; and

4) A signed statement by the responsible official certifying the truth, accuracy, and completeness of the information provided in the report.

iii. *Re-validation results*. The Permittee shall submit to the Control Officer the results of any re-validation test or method within 3 months after completion of such test or method. [County Rule 240 §§ 304.8.a and 305.1.d] [40 CFR §§ 51.165(f)(7)(x) and (f)(14); and 40 CFR §§ 52.21(aa)(7)(x) and (aa)(14)]

SEMICONDUCTOR MANUFACTURING

4. Solvent Cleaning Stations:

The Permittee shall operate solvent cleaning stations which contain more than 10% VOC materials, 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 §306]

b. All heated or unheated reservoirs and sinks using VOC-containing materials with a vapor pressure exceeding 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)][Locally Enforceable Only]

c. Solvent flow of VOC-containing materials shall be applied in a continuous unbroken stream in a manner which shall prevent liquid loss resulting from splashing. [County Rule 338 §302.1(c)][Locally Enforceable Only]

d. VOC-containing material used for the purpose of cleaning semiconductor manufacturing 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/gallon); 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 the washing, rinsing, and draining such that no greater than 50 ppm (220 mg/m^3) of trace VOC emissions are detected when determined according to Rule 338 §503.5. [County Rule 338 §302.2][Locally Enforceable Only]

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. An ECS that achieves an overall control efficiency as required by this permit as verified through the performance testing requirements of Permit Condition 41; or

ii. 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. Materials in the operation contain less than 100 g VOC/l or no more than 10% VOC by weight. [County Rule 338 §302.3][SIP Rule 338 §306]

5. Solvent Storage and Disposal:

   The Permittee shall comply with all of the following:

   a. All storage of VOC-containing materials subject to evaporation, including the storage of waste solvent and waste solvent residues, shall at all times be stored in closed containers, except when contents are added or removed;

   b. Such containers shall be legibly labeled with their contents;

   c. 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 or having the waste hauled off-site in sealed containers or tank trucks.

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

6. Semiconductor Systems:

   The BSSW treatment system shall not be operated unless the exhaust generated during treatment operations is vented through a Thermal Oxidizer (TO) meeting the requirements in Permit Condition 7.a.i, 7.a.ii, and 7.a.vi.

   [County Rule 241 §304(Locally Enforceable Only)]

7. Control Requirements:

   a. VOC abatement units for Semiconductor Fabrication:

      The Permittee, to the extent practicable, shall exhaust all process VOC emissions from semiconductor manufacturing operations to a properly functioning VOC abatement unit at all times during normal operation in accordance with the most recently submitted O&M plan.

      [County Rule 210 §302.1(b)]

      i. All VOC abatement units shall be operated to control process VOC emissions from semiconductor manufacturing. The VOC abatement units shall achieve an overall VOC control efficiency or outlet concentration level 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.

         [County Rule 240 § 304.9.a][County Rule 241 §304(Locally Enforceable Only)]

      ii. The Fab 52 and Fab 62 VOC abatement units shall meet the NOX emission rates listed in Table 5.

      [County Rule 240 § 304.9.a] [40 CFR § 52.21(j)]

      iii. All VOC abatement units, as applicable, shall operate with the combustion chamber temperature set-point set at the same or higher combustion chamber set-point used to demonstrate compliance during the most recent Performance Test. .

      [County Rule 210 § 302.1(b)]

      iv. The Permittee may use Variable Frequency Devices (VFDs) on the RCTOs to reduce emissions of NO_X and CO. Once the Permittee conducts performance testing on the RCTOs that are equipped with VFDs and uses the emission data for compliance, the VFDs shall remain on the RCTOs for as long as the Permittee uses these updated emission factors. If the Permittee wishes to remove the VFDs for any reason, the Permittee should go back to using emission factors from a previous test which did not include the VFD reduction in CO and NO_X.

[County Rule 210 § 302.1(b)]

v. The VFDs shall be operated according to manufacturer recommendations or alternative methods developed and approved by the Department to ensure proper operation.

[County Rule 210 § 302.1(b)]

vi. Compliance with the efficiency requirements of this condition shall be demonstrated in accordance with the testing requirements of Permit Condition 41. Emissions such as those from IPA wipes used in fabs are not considered when determining the control efficiency of the VOC abatement units, because these emissions are accounted for by mass balance as uncontrolled.

[County Rule 210 §302.1(b)]

b. The Permittee, to the extent practicable, shall vent inorganic HAP emissions from etch, chemical vapor deposition, and wet bench processes to a wet acid scrubber at all times during normal operations in accordance with the most recently submitted O&M plan. The wet acid scrubbers shall be properly functioning in accordance with the most recently submitted O&M Plan at all times during normal operation. Inorganic HAP emissions from the manufacturing operations shall be vented to the wet acid 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 wet acid scrubber system shall have a removal efficiency of at least 90% by weight for HCl or an outlet concentration for HCl of 1 ppmv or less.

[County Rule 210 §302.1(b)]

c. The wet scrubbers at Fab 52 and Fab 62 shall meet a VOC limit of 10 ppmv based on an average of the operational scrubbers tested at both fabs.

[County Rule 240 § 304.9.a]

d. The Permittee shall operate and maintain the Point-of-Use (POU) abatement devices at Fab 52 and Fab 62 in accordance with good combustion practices and manufacturer or Permittee specifications to control NO_X emissions from the wet scrubbers.

[County Rule 240 § 304.9.a] [40 CFR § 52.21(j)]

e. New semiconductor manufacturing equipment which has emissions of VOCs or Organic HAPs shall be vented to appropriate control devices 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 210 §302.1(b)]

f. 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 in accordance with following requirements:

Capture efficiency of an emission control device used to meet the requirements of Permit Condition 7.a.i. 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 39.k.

[County Rule 338 §503.3][Locally Enforceable Only]

g. The Permittee shall install, operate, and maintain POU abatement devices at Fab 52 and Fab 62

that are specifically designed for fluorinated GHG abatement.

[40 CFR § 52.21(j)]

h. The Permittee shall install, operate, and maintain the POU abatement devices at Fab 52 and Fab 62 in accordance with manufacturer or Permittee specifications to control GHG emissions.

[County Rule 210 §302.1(b)]

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

a. The Permittee shall submit an O&M Plan(s) for the following devices to the AQD Online Portal:

i. Wet Acid Scrubbers;

ii. Thermal Oxidizers including BSSW Thermal Oxidizer;

iii. Rotor Concentrator Thermal Oxidizers (RCTOs); and

iv. IWW Odor Control Scrubbers.

b. The Permittee shall submit an O&M Plan, or a revision to an existing plan, for any additional wet scrubber, TOs, RCTOs or other VOC abatement units 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.

c. The Permittee shall revise the O&M Plan upon the request of MCAQD and whenever substantive changes are made to the equipment or plan, consistent with MCAQD guidelines.

For the purposes of this condition, substantive changes include changes in procedures, reading ranges, temperature changes, etc. Administrative changes, such as grammar or typographical errors, are not considered substantive changes.

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.

i. At a minimum the plan shall include:

1) Wet Acid Scrubbers: Media static pressure deferential, pH level, and water recirculation flow rate.

2) RCTOs and BSSW Thermal Oxidizers: Oxidizer combustion temperature.

f. The Permittee shall monitor, operate and maintain control devices in accordance with the most recently submitted O&M plan. If any control device is found to be operating outside a specified range, the Permittee shall take corrective action as specified in the most recently submitted O&M plan or shut down the device and the equipment vented to it. In the event of any unforeseen downtime such as malfunctions or power outages, the Permittee shall log all of these instances and any root-cause analysis conducted as a result (if applicable).

[County Rule 210 §302.1(b)]

EMERGENCY ENGINES

All engines on site are subject to Permit Conditions 9 and 10. Additional requirements for engines are outlined in sections "Emergency Engines subject to 40 CFR 60 Subpart IIII" and "Emergency Engines subject to 40 CFR 63 Subpart ZZZZ"

9. Operational Limitations:

a. The Permittee shall limit the operation of the emergency engines to no more than 100 hours each per calendar year for the purposes of maintenance checks and readiness testing.
[Rule 324 §§104.5, 205] [SIP Rule 324 §§104.5, 205] [40 CFR §§60.4211(f)(2) and 63.6640(f)(2)]

b. The emergency generators shall not be used for peak shaving.
[County Rule 210 §302.1(b)]

c. The emergency generators 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 as long as the total number of hours of the operation does not exceed the hours specified in Section 9.a above as evidenced by an installed non-resettable hour meter;

iii. Emergency pumping of water resulting from a flood, fire, lightning strikes, police action or for any other essential public services which affect the public health and safety;

iv. Lighting airport runways;

v. Sewage overflow mitigation and/or prevention;

vi. As the prime engine when the prime engine has failed, but only for such time as is needed to repair the prime engine; or

vii. To operate standby emergency water pumps for fire control that activate when sensors detect low water pressure.
[County Rule 324 §104]

d. New Source Performance Standards:

If the Permittee modifies or reconstructs a stationary compression ignition internal combustion engine after July 11, 2005, that engine shall comply with all applicable requirements of 40 CFR 60 Subpart IIII.
[40 CFR §60.4200(a)(3)]

10. Fuel Limitations:

Unless specified below, the Permittee shall not use any fuel that contains more than 0.0015% sulfur by weight, alone or in combination with other fuels in the engines.
[County Rule 324 §301.1][40 CFR § 52.21(j)]

Additional requirements for emergency engines subject to 40 CFR 60 Subpart IIII

Permit Conditions 10 through 14 apply to affected facilities under 40 CFR 60 Subpart IIII, which include engines identified in Table 1, below.

Table 1: Emergency engines subject to 40 CFR 60 Subpart IIII

# of Engines	Manufacturer	Model	Rated Brake Horsepower	Location	Year of Manufacture	EPA Emission Standard
3	Cummins	2000 DQKC	2922	Fab 32 Generator House	2005/2006	Table 1, NSPS IIII
2	Caterpillar	3516C D1TA	2937	Fab 32 Litho Generator Pad	2007	Tier II
1	Cummins	2000-DQKAB	2922	Fab 32 Generator House	2008	Tier II

2	MTU	2000-XC6DT2	3058	Fab 32S Litho Generator Pad	2010	Tier II
12	Cummins	2500- DQLE	3680	Fab 42 EGEN Building	2011, 2012, 2018, 2019	Tier II
1	Caterpillar	C15 DITA	546	BRW Area RW1A	2012	Tier III
3	Caterpillar	3516C-HD	3634	F12 Litho Generators	2016	Tier II
1	Cummins	600 DQCA	1220	CAP Water	2017	Tier II
2	Cummins	C3000 D6e	4307	IWW Plant	2019 and Future Install	Tier II
24	Cummins	2750DQLH	4060	Fab 52 and Fab 62	Future Install	Tier IV
1	Cummins	C150D6D	237	OC30 Chiller Plant	2022	Tier III
3	Cummins	2500DQLE	3,705	F42 FSB	2022	Tier II
1	Cummins	2000DQKAE	2,922	Datacenter	Future Install	Tier IV
1	Caterpillar	3512C	2,584	F12 Generator Pad	Future Install	Tier II

11. Emissions Limitations/Standards:

a. The emergency generators shall meet the EPA Emissions standards as specified in Table 1 above. [County Rule 241 § 304]

b. The three Fab 32 Emergency Generators – Model Year 2006 Cummins 2292 DQKC 2922 BHP, shall meet emission standards found in Table 1 of 40 CFR 60 Subpart IIII as required by 40 CFR §60.4205:

Table 2: Engine standards from Table 1 of 40 CFR 60 Subpart IIII

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, 60.4211(c)]

12. 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. Compliance with this condition shall be verified by purchasing an engine certified to meet this standard, outlined either in a manufacturer's data sheet or other statement given by the engine manufacturer. 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 Table 1, 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 each engine specified in Table 1 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 §§60.4206, 60.4211(a)(1)] [County Rule 210 § 302.1(b)]

d. The Permittee shall only change those engine settings that are permitted by the manufacturer.

[40 CFR §60.4211(a)(2)]

e. The Permittee shall meet the requirements of 40 CFR Parts 89 and/or 1068, as they apply.

[40 CFR §60.4211(a)(3)]

f. The Permittee shall install, operate, and maintain diesel particulate filters (active or passive) on the Fab 52 and Fab 62 emergency generators for control of PM_{10} and $PM_{2.5}$ emissions.

[County Rule 241 § 305]

13. Fuel Limitations:

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 IIII, 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)]

14. Monitoring:

The Permittee shall install a non-resettable totalizing hour meter prior to startup of the engines. If the non-resetting totalizing hour meter is found to be malfunctioning, operation of the engine shall cease until corrective action(s) can be implemented or the function of the meter is restored. A correction action may be troubleshooting the engine, which may require running the engine.

[County Rule 210 §302.1(c)][County Rule 324 §308][40 CFR §§60.4209(a), 63.6625(f)]

Additional requirements for emergency engines subject to 40 CFR 63 Subpart ZZZZ

Permit Conditions 15 through 17 apply to affected sources subject to 40 CFR 63 Subpart ZZZZ, which include the engines identified in Table 3.

Table 3: Emergency engines subject to 40 CFR 63 Subpart ZZZZ

# of Engines	Manufacturer	Model	Rated Brake Horsepower	Location	Year of Manufacture
4	Caterpillar	3516 D1TA	2518	Fab 12 Generator Pad	1994
2	Caterpillar	3306 BT	275	Pumphouse #1 & #2	1994
4	Caterpillar	3512 D1TA	1818	Fab 32S	2000
4	Cummins	1750 DQKB	2922	Fab 32S	2000
1	Caterpillar	3516 D1TA	2525	Fab 12 Generator Pad	2004
1	Caterpillar	3412C D1TA	897	F12/32S Link Generator	2005

15. General Compliance Requirements:

The Permittee shall operate any affected sources, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require the Permittee to make any further efforts to reduce emissions if levels required by applicable standards have been achieved. 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(b)]

16. 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.

[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, after which time the emission standards applicable to all times other than startup in Tables 1a, 2a, 2c, and 2d to 40 CFR 63 Subpart ZZZZ apply.

[40 CFR §63.6625(h)]

17. 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/VAPORIZED NATURAL GAS-FIRED HEATERS/VOC ABATEMENT UNITS/TRMX)

18. Operational Limitations:

a. The Permittee may only use natural gas, butane and propane as fuels for boilers, vaporized natural gas-fired heaters, RCTOs, and TRMX systems.

[County Rule 210 § 302.1(b)]

b. The Permittee shall install, operate and maintain natural gas fuel meters on all boilers, vaporized natural gas-fired heaters, RCTOs, and TRMX systems. If a natural gas meter fails or malfunctions, Permittee shall ensure natural gas usage remains consistent with normal operation and ensure equipment is operated normally until natural gas meter is repaired or replaced.

[County Rule 210 §302.1(b) and (c)(1)]

c. The Permittee shall install, operate, and maintain burners for the Fab 52 and Fab 62 boilers that are designed to include electronic ignition, natural gas firing, optimized excess air, and heat recovery for chiller operations for control of GHG, PM_{10}, and $PM_{2.5}$ emissions.

[County Rule 241 § 305] [40 CFR § 52.21(j)]

d. The Fab 52 and Fab 62 RCTOs shall be natural gas fired and be equipped with recuperative primary and secondary heat exchangers for control of GHG emissions.

[40 CFR § 52.21(j)]

e. The Permittee shall tune the burners on the Fab 42, Fab 52, and Fab 62 TRMX systems annually in accordance with good combustion practices or follow the manufacturer's recommended procedure, if applicable, for control of CO emissions.

[County Rule 241 § 304 (Locally Enforceable Only)] [40 C.F.R § 52.21(j)]

f. The Permittee shall install, operate, and maintain burners for the Fab 52 and Fab 62 boilers that are designed to achieve a VOC emission rate of 4 ppmv per manufacturers specifications.

[County Rule 240 § 304.9.a]

19. Emission Limitations – Nitrogen Oxides and Carbon Monoxide:

a. Boilers and Vaporized Natural Gas-Fired Heaters

i. The boilers and vaporized natural gas-fired heaters shall meet the NO_X and CO emission limits specified in Table 4, corrected to 3% O_2 when fired by natural gas.

Table 4: NO_X and CO Emission Limits for Boilers

Group as specified in Condition 41.a.v.2)	Fab	Boiler/Vaporized Natural Gas-Fired Heater	Capacity (MMBtu/Hr)	NO_X Emission Limit (ppmv)	CO Emission Limit (ppmv)
Group 1	F12	Boiler 1	51.7	12	50
Group 2	F12	Boiler 2	52.5	42	100
	F12	Boiler 3	52.5	42	100
	F12	Boiler 4	52.5	42	100
Group 3	F32S	Boiler 1	31.5	30	50
	F32S	Boiler 2	31.5	30	50
	F32S	Boiler 3	31.5	30	50
	F32S	Boiler 4	31.5	30	50
Group 4	F32S	Boiler 5	42	12	50

Group as specified in Condition 41.a.v.2)	Fab	Boiler/Vaporized Natural Gas-Fired Heater	Capacity (MMBtu/Hr)	NO_X Emission Limit (ppmv)	CO Emission Limit (ppmv)
Group 5	F32S	Boiler 6	33.5	9	50
	F32S	Boiler 7	33.5	9	50
Group 6	F32	Boiler 2	10.5	12	50
Group 7	F42	Boiler 2	29.39	9	50
	F42	Boiler 3	29.39	9	50
	F42	Boiler 4	29.39	9	50
Group 8	F42	Boiler 1	14.3	12	50
Group 9	ASU	Vaporized Natural Gas-Fired Heater 1	59	9	50
	ASU	Vaporized Natural Gas-Fired Heater 2	59	9	50
Group 10	F52/62	Boiler 1	29.39	9	50
	F52/62	Boiler 2	29.39	9	50
	F52/62	Boiler 3	29.39	9	50
	F52/62	Boiler 4	29.39	9	50
	F52/62	Boiler 5	29.39	9	50
	F52/62	Boiler 6	29.39	9	50
	F52/62	Boiler 7	29.39	9	50
Group 11	F52/62	Boiler 8	14.29	9	50

[County Rule 323 §§304,305] [County Rule 240 § 304.9.a] [County Rule 241 §304(Locally Enforceable Only)][40 CFR § 52.21(j)]

b. RCTO VOC Abatement Units: The following RCTO units shall not exceed the BACT NO_X and CO emission limits specified in Table 5.

Table 5: NO_X and CO Emission Limits for RCTO VOC Abatement Units

Group	Fab	RCTO	Inlet Gas Flow Capacity (CFM)	Burner Capacity (MMBtu/Hr)	NO_X Emission Limit (lb NO_X/hr) as a Group Average	CO Emission Limit (lb CO/hr) as a Group Average
1	12	RCTO 5 – Munters	44,000	3.5	0.34	0.24
2	32S	RCTO 6 – Munters	25,000	2.0	0.20	0.14
	32S	RCTO 7 – Munters	25,000	2.0		
3	32	RCTO 4 – Munters	44,000	3.5	0.34	0.24
	32	RCTO 5 – Munters	44,000	3.5		
	32	RCTO 6 – Munters	44,000	3.5		
4	42	RCTO 1 – Anguil	120,000	8.0	0.78	0.54
	42	RCTO 2 – Anguil	120,000	8.0		
	42	RCTO 3 – Anguil	120,000	8.0		
	42	RCTO 4 – Anguil	120,000	8.0		

Group	Fab	RCTO	Inlet Gas Flow Capacity (CFM)	Burner Capacity (MMBtu/Hr)	NO_X Emission Limit (lb NO_X/hr) as a Group Average	CO Emission Limit (lb CO/hr) as a Group Average
	42	RCTO 5 – Anguil	120,000	8.0		
	32	RCTO 4B – Anguil	120,000	8.0[1]		
	32	RCTO 5B – Anguil	120,000	8.0[1]		
6	12	LCE RCTO 3 – Anguil	90,000	8.0	0.78	0.54
	12	LCE RCTO 4 – Anguil	90,000	8.0		
7	52	RCTO 1 – TBD	120,000	8.0	0.78	0.54
	52	RCTO 2 – TBD	120,000	8.0		
	52	RCTO 3 – TBD	120,000	8.0		
	52	RCTO 4 – TBD	120,000	8.0		
	62	RCTO 1 – TBD	120,000	8.0		
	62	RCTO 2 – TBD	120,000	8.0		
	62	RCTO 3 – TBD	120,000	8.0		
	62	RCTO 4 – TBD	120,000	8.0		

Note: 1 – Installed burner capacity.

[County Rule 240 §304.9.a] [County Rule 241 §304(Locally Enforceable Only)] [40 CFR § 52.21(j)]

c. TRMX systems:

The selective catalyst reduction (SCR) system for Fab 42, Fab 52 and Fab 62 TRMX systems shall meet a NO_X emission limit of 0.34 lb NO_X/hr.

[County Rule 241 §304][Locally Enforceable Only]

Additional requirements for boilers with input capacities between 10 MMBtu/Hr and 100 MMBtu/Hr

20. 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][40 CFR §60.40(c)]

a. The Permittee shall submit to the Control Officer notification of the date of construction and actual startup of any affected facility, 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 affected facility.

ii. The annual capacity factor at which the Permittee anticipates operating the affected facility based on all fuels fired and based on each individual fuel fired.

iii. If applicable, a copy of any federally enforceable requirement that limits the annual capacity

factor for any fuel or mixture of fuels under §60.42c, or §60.43c.

iv. Notification if an emerging technology will be used for controlling SO_2 emissions. The Administrator will examine the description of the control device and will determine whether the technology qualifies as an emerging technology. In making this determination, the Administrator may require the owner or operator of the affected facility to submit additional information concerning the control device. The affected facility is subject to the provisions of §60.42c(a) or (b)(1), unless and until this determination is made by the Administrator.

[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 affected facility, as follows:

i. A notification of the date construction or reconstruction of the affected facility 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 the affected facility postmarked within 15 days after such date.

[40 CFR §60.7]

COOLING TOWER OPERATIONS

21. Operating Limitations:

To ensure compliance with the emission limitations outlined in Permit Condition 2.a and 2.b:

a. The Permittee shall limit the total dissolved solids (TDS) concentration of the circulating water of each cooling tower unit to 6,500 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 [f].

b. The maximum drift rate for the cooling towers, achieved through the use of drift eliminators, shall be no more than:

i. 0.001% for the existing Fab 12, Fab 32S, and Fab 32 cooling towers, and the five (5) future install F32-OC30 packaged cooling towers;

[County Rule 210 §302.1(b)]

ii. 0.002% for the two (2) future install F32S packaged cooling towers; and

[County Rule 210 §302.1(b)]

iii. 0.0005% for the Fab 42, Fab 52, Fab 62, and ASU cooling towers.

[County Rule 241 §304][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 210 §302.1(b)]

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.

f. 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 PM/PM_{10}/$PM_{2.5}$ emissions from each cooling tower. An average conductivity value may be used if multiple readings are taken in one month.

[County Rule 210 §302.1(c)]

ARCHITECTURAL COATING OPERATIONS

22. 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, sell, offer for sale or manufacture for sale within Maricopa County 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][SIP Rule 335 §301]

ii. Non-Flat Architectural Coating:

The Permittee shall not apply, sell, offer for sale or manufacture for sale within Maricopa County 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 in Paragraph iv. of this condition.

[County Rule 335 §303][SIP Rule 335 §303]

iii. Flat Architectural Coating:

The Permittee shall not apply, sell, offer for sale or manufacture for sale within Maricopa County 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 in Paragraph iv. of this condition.

[County Rule 335 §304][SIP Rule 335 §304]

iv. Specialty Coatings:

The Permittee shall not apply, sell, offer for sale or manufacture for sale within Maricopa County any architectural coating that exceeds the limits specified in County 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][SIP Rule 335 §305]

b. Exemptions:

The requirements 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, 307][SIP Rule 335 §§306, 307]

c. Labeling Required:

Containers for all architectural coatings shall carry a statement of the manufacturer's recommendation regarding thinning of the coatings. Data may be quantified with either English or metric units. This requirement shall not apply to the thinning of the architectural coatings with water. 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. Architectural coatings subject to the Federal Insecticide, Fungicide and Rodenticide Act shall not be subject to the labeling requirements of this condition.

[County Rule 335 §401][SIP 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][SIP Rule 335 §402]

SURFACE COATING OPERATIONS

23. Rule 336 Applicability:

The Permittee shall comply with the requirements of County Rule 336, if the Permittee engages in surface coating operations with VOC coatings listed in Tables 336-1 through 336-7 of County Rule 336.

[County Rule 336 §102][Locally Enforceable Only]

24. 40 CFR 63 Subpart HHHHHH Applicability:

The Permittee shall comply with all applicable requirements of 40 CFR 63 Subpart HHHHHH if the Permittee engages in any spray application of coatings to any part or product made of metal and/or plastic using coatings containing compounds in excess of the following:

a. Hexavalent chromium (Cr+6) (*e.g.*, chromates), lead (Pb), nickel (Ni), or cadmium (Cd), if those compounds comprise more than 0.1% of the coating by mass.

b. Coatings containing compounds of trivalent chromium (Cr+3) or manganese (Mn), if those compounds comprise more than 1.0% of the coating by mass.

[40 CFR 63.11170(a)(3)]

STORAGE SILOS

25. Process Emission Limitations and Controls:

The Permittee shall implement the following process controls:

a. On all lime and sodium bicarbonate storage silos, install an operational overflow warning system/device. The system/device shall be designed to alert and allow the operator(s) to stop the loading operation when the silos are reaching a capacity that could adversely impact pollution

control equipment.

b. On all lime and sodium bicarbonate silos, install and operate a properly sized fabric filter baghouse or equivalent device.

i. The baghouse or equivalent device shall be designed to meet a maximum outlet grain loading of 0.01 gr/dscf for storage silos at Fab 12, Fab 32S, Fab 32, Fab 42, and IWW.

ii. The baghouse or equivalent device shall be designed to meet a maximum outlet grain loading of 0.005 gr/dscf for storage silos at Fab 52 and Fab 62.

[Rule 241 §304(Locally Enforceable Only)]

INDUSTRIAL WASTEWATER (IWW) PLANT

26. Standards:

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

[County Rule 320 §300][SIP Rule 32.A]

b. 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]

c. Materials, including but not limited to, solvents or other volatile compounds, paints, acids, alkalies, pesticides, fertilizer, and manure shall be processed, stored, used and transported in such a manner and by such means that they will not unreasonably evaporate, leak, escape or be otherwise discharged into the ambient air so as to cause air pollution. Where means are available to reduce effectively the contribution to air pollution from evaporation, leakage, or discharge, the use of such control methods, devices, or equipment shall be mandatory.

[County Rule 320 §302][SIP Rule 32.C]

27. Limitation - Hydrogen Sulfide (H_2S):

a. No person shall emit H_2S 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]

b. Compliance Demonstration:

i. The Permittee shall perform a compliance demonstration by conducting a test to monitor H_2S levels within 60 days of any of the following events:

1) After all the IWW odor control scrubbers have achieved the capability to operate at their maximum production rate on a sustained basis; or

2) The receipt of three (3) odor complaints within any 12-month period; or

3) The receipt of a written request from MCAQD.

4) The Permittee shall perform an additional compliance demonstration within six (6) months of completing the initial start-up demonstration.

a) If the average H_2S concentration is less than 0.03 ppmv in any of the first two compliance demonstrations, the monitoring shall be subsequently conducted on an annual basis.

b) If the H_2S concentration is less than 0.03 ppmv for two consecutive annual

compliance demonstrations, compliance demonstrations will no longer be required.

c) If results from any compliance demonstration indicate that the H_2S concentration is greater than 0.03 ppmv, the Permittee shall return to the semi-annual compliance demonstration schedule.

[County Rule 210 §§302.1(b) and (c)][A.A.C. R18-2-306.A.2 and A.3]

ii. The Permittee shall monitor H_2S levels using a portable H_2S gas analyzer approved by the Control Officer, with the capability to detect H_2S at concentrations in the parts per billion by volume (ppbv) range. The analyzer shall be calibrated and operated in accordance with the manufacturer's operating instruction book.

iii. Monitoring shall be conducted at a minimum of 12 locations of equal spacing along the property line of the facility and shall be collected from between three and six feet above ground surface. The monitoring period for each location shall be a period of ten (10) minutes and the period shall begin as soon as possible after the tester arrives at the sampling location.

1) If odors are detectable when the tester arrives at a monitoring location, three readings shall be taken at roughly five-minute intervals.

2) If no odors are detectable when the tester arrives at a monitoring location, the tester shall not immediately begin to take readings.

a) If odors become noticeable during the ten-minute monitoring period, the tester shall take three readings that are evenly spaced over the remainder of the ten-minute monitoring period.

b) If no odors are detectable during the first nine minutes of the sampling period, then the three required readings shall be taken during the final minute of the monitoring period.

[County Rule 270 §408][County Rule 210 §302.1(c)]

iv. The Permittee shall submit a report within 30 days of completion of each demonstration to MCAQD, through the AQD Portal, that details the results of each compliance demonstration.

[County Rule 210 §302.1(e)]

c. Compliance Plan:

i. In the event of an exceedance of H_2S, 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 H_2S control alternatives.

2) Additional monitoring and or air dispersion modeling to determine property line H_2S concentration based on the implementation of selected H_2S control alternatives.

3) Conceptual design and preliminary cost estimate for the proposed H_2S control alternatives.

4) Schedule for design and construction of the proposed control alternatives.

5) Description of recommended actions.

ii. The Permittee shall complete and submit the Compliance Plan within 120 calendar days of the last monitoring measurement indicating an exceedance of the H_2S limit in Permit Condition 27.a.

[County Rule 210 §302.1(b) and (e)]

FUGITIVE DUST FROM DUST-GENERATING OPERATIONS

28. General Requirements for Dust-Generating Operations:

a. The provisions of Permit Conditions 28 through 37 apply to all dust-generating operations except

for those dust-generating operations listed in Permit Condition 29 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]

29. Exemptions:

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

a. Normal farm cultural practices according to Arizona Revised Statutes (A.R.S.) §49-457 and A.R.S. §49-504.4.

b. The following non-traditional sources of fugitive dust that are located at sources that do not require any permit under these rules. These non-traditional sources of fugitive dust are subject to the standards and/or requirements described in Rule 310.01: Fugitive Dust from Non-Traditional Sources of Fugitive Dust of these rules:

i. Vehicle use in open areas and vacant lots.

ii. Open areas and vacant lots.

iii. Unpaved parking lots.

iv. Unpaved roadways (including alleys).

v. Livestock activities.

vi. Erosion-caused deposition of bulk materials onto paved surfaces.

vii. Easements, rights-of-way, and access roads for utilities (transmission of electricity, natural gas, oil, water, and gas).

c. 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.

d. 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.

e. Rooftop operations for cutting, drilling, grinding, or coring roofing tile when such activity is occurring on a pitched roof.

[SIP Rule 310 §103]

30. 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]

31. Visible Emission Requirements for Dust-Generating Operations:

a. The Permittee shall not cause or allow visible fugitive dust emissions from a dust-generating operation 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 from a dust-generating operation 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]

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

a. If wind conditions cause fugitive dust emissions to exceed the opacity requirements of Permit Condition 31, despite implementation of the Dust Control Plan an owner and/or operator shall:

i. 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.

ii. Cease dust-generating operations and stabilize any disturbed surface area consistent with the Stabilization Requirements of Permit Condition 33.

iii. Compile records consistent with the recordkeeping requirements of Permit Condition 39.o 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]

33. 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 is an area that is not paved and that is designated for parking in the Dust Control Plan or that is used for parking, maneuvering, material handling, or storing motor vehicles and equipment. An unpaved parking lot includes, but is not limited to, salvage yards, material handling yards, and storage yards.

[SIP Rule 310 §§232, 304.1]

b. Unpaved Haul/Access Road:
An unpaved haul/access road is any on-site road or equipment path that is not paved and is used by commercial, industrial, institutional, and/or governmental traffic.

i. 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, 304.2(a)]

ii. 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 [33.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 ii. of this Permit Condition, 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 in Permit Condition 33.c.i through 33.c.vii 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]

34. 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]

35. 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(a), (b), and (e)]

36. 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 Permit Conditions 30 through 39 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]

37. Records Retention:

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

[SIP Rule 310 §503]

SITE-WIDE REQUIREMENTS

38. Opacity:

Unless specified elsewhere in this Permit, 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 for a period aggregating more than three minutes in any 60-minute period, except as described in SIP 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. [SIP Rule 300 §§ 301, 302, and 501]

39. Recordkeeping:

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

a. Maintain a current list of materials used in the manufacture of semiconductors: coatings, adhesives, maskants, solvents, cleaning solutions, and any other VOC-containing materials. State the material VOC content of each in pounds per gallon, grams per liter, or as a weight percent (percent by mass) of the material.

[SIP Rule 338 §502.1]

b. Usage records:

i. Maintain monthly records showing the type and amount of all VOC-containing material used in semiconductor operations, except as modified by subsections b and c below. This includes, but is not limited to, strippers, maskants, solvent materials and cleanup materials.

ii. Grouping by VOC Content: For purposes of recording usage, those maskants, strippers, coatings, solvents or other VOC-containing materials that are of similar type and similar VOC content may be given a group name and recorded under that name. To the group name shall be assigned the highest VOC content among the members of that group, rounded to the nearest 10th of a pound per gallon, the nearest 1 g/L, or the nearest 1 percent. For each grouping, the name of each material in the group and its material VOC content must appear, along with the name of the grouping and its material VOC content.

iii. Update annually the usage of materials having a VOC content of 10.0% or less. The results of an applicable test method, referred to in Rule 338 Section 504, or data supplied by the material's manufacturer suffices to demonstrate VOC content of material for this purpose. If there is a discrepancy between the manufacturer's formulation data and the results of an applicable test method, compliance shall be based on the results from the test method analysis.

iv. 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 as byproducts.

[SIP Rule 338 §502.1][County Rule 210 § 302.1(c)(2)]

c. 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 2.a and 2.b, then the Permittee shall keep records for 5 years from the date the applicable record was generated.

[County Rule 338 §502.3][County Rule 210 § 302.1(c)(2)]

d. Emission Control System (ECS) Recordkeeping:

i. Make a continuous record of the times an ECS is used to comply with Rule 338; Permit Conditions 4 and 7.

ii. Maintain records of the O&M Plan's key system operating parameters with the frequency required by the Plan.

iii. Maintain records of all maintenance performed according to the most recently submitted O&M Plan.

iv. An explanation shall be entered for scheduled maintenance that is not performed during the period designated in the most recently submitted O&M Plan.

[County Rule 338 §502.4][Locally Enforceable Only]

e. If the Permittee engages in surface coating operations subject to County Rule 336, the Permittee shall comply with the recordkeeping requirements of County Rule 336 Section 501.

[County Rule 336 §501][Locally Enforceable Only]

f. To verify compliance with engines subject to County Rule 324 and Permit Conditions 9 through 17 of this permit, 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][SIP Rule 324 §502.1]

g. Monthly records of engine operation shall be kept to verify compliance with Permit Condition 2.a and 2.b. 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.

[County Rule 210 §302.1(c)(2)][40 CFR§ 60.4211(e)]

h. A copy of engine manufacturer data indicating compliance with the standards in Permit Condition 11 for each compression ignition engine, and shall make the documentation available to MCAQD upon request.

[County Rule 210 §302.1(c)(2)][40 CFR§ 60.4211(b)(3)]

i. 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 to indicate compliance with Permit Condition 17.

[County Rule 210 §302.1(c)(2)][40 CFR §§63.6655(e)(2), 63.6660]

j. 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.

k. The Permittee shall maintain records to demonstrate compliance with Permit Condition 7.f, specifically that the VOC abatement unit's exhaust distribution systems are continuously monitored to ensure adequate negative pressure is maintained within system set points.

l. The Permittee shall maintain a record of installation from the manufacturer for each POU abatement device at Fab 52 and Fab 62 documenting that abatement systems are specifically designed for fluorinated GHG abatement.

[County Rule 210 § 302.1(c)(2)]

m. 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.

n. The Permittee shall keep maintenance records, for all storage silo fabric filter baghouses or equivalent devices according to the manufacturer's specifications or procedures developed by the Permittee that are approved by the manufacturer. Maintenance records shall, at a minimum, contain the following information: equipment identification; date; identification of the individual performing the maintenance check; procedures to be performed including frequency of occurrence; results of inspection (acceptable, nozzle plugged, belt cracked, etc.); and corrective action taken (none, cleaned nozzle, replaced belt, etc.).

[County Rule 210 §302.1(c)(2)]

o. The Permittee shall keep a written record of self-inspection on each day dust-generating operations that require a Dust Control Plan 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]

p. Retention of records of all required monitoring data and support information for a period of at least five years from the date of monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this Permit.

q. The Permittee shall keep records of the maintenance required by Permit Conditions 16.a, 21.d, and 39.n. For annual and semi-annual maintenance intervals, the Permittee may follow the schedule specified by the Computerized Maintenance Management System (CMMS) utilized by the Permittee, which are:

i. Annual: 35 days from the annual anniversary

ii. Semi-annual: 28 days from the 6-month anniversary

[County Rule 210 §302.1(d)(2)]

40. Reporting:

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

[County Rule 210 §§ 301.7, 305.1(c), (d), and (e)]

a. The Permittee shall submit a report identifying emission factors used for all HAP and VOC emissions 45 days following the end of the first quarterly reporting period, or as requested by the Department.

[County Rule 210 §302.1(e)(1)]

b. Semi-annual reports of any required monitoring shall be submitted to the AQD Portal within 45 days following June 30 and December 31 each calendar year. Each report shall cover all instances of deviations from these permit conditions during the reporting period, the cause of the deviations if any were present, and any applicable corrective actions taken. The report shall contain the following information, at a minimum:

i. Emissions Calculations:
The Permittee shall include the results of all the required rolling 12-month emissions calculations for each month in the six-month reporting period. The quarterly reports required by Permit Condition 40.a can be used to satisfy the requirements of this report.

ii. Deviation Reporting:
The Permittee shall identify all instances of deviations from permit requirements in the semi-annual monitoring report. The Permittee shall include the probable cause of such deviations,

and any corrective actions or preventative measures taken.

iii. A signed statement by a responsible official certifying the truth, accuracy, and completeness of the information provided in the report.

[County Rule 210 §§ 302.1(c)(2), 302.1(e)(1) and 305.1(c)(1)]

c. The Permittee shall submit a compliance certification at least annually with the Control Officer and also with the Administrator of the USEPA. This annual requirement is met through both semiannual reports required by Permit Condition 40.b with a full year completed upon submittal of the report associated with the June 30 and December 31 reporting period (within 45 days following the December 31 review period). The Report shall certify compliance with the terms and conditions contained in this permit, including emission limitations, standards, or work practices. The first report from permit issuance will be due on the first applicable due date regardless if six-months has passed.

i. The annual compliance certification shall contain the following information:

1) The identification of the Permittee and the permit number.

2) The identification of each term or condition of the permit that is the basis of the certification;

3) The compliance status;

4) Whether compliance was continuous or intermittent;

5) The method(s) used for determining the compliance status of the source, currently and over the reporting period;

6) A signed statement by a responsible official certifying the truth, accuracy, and completeness of the information provided in the report.

[County Rule 210 §§302.1(e)(1), 305.1(c)(1), and 305.1(d)]

d. 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.

[40 CFR § 60.7(a)]

e. Ultra Low Sulfur Diesel Verification:
If the Control Officer requests documentation of the sulfur content of fuel burned in the engine(s) to demonstrate compliance with the 0.0015% limit, the Permittee shall submit fuel receipts, contract specifications, pipeline meter tickets, Safety Data Sheets (SDS), 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 §501.3][Locally Enforceable Only]

41. Performance Testing:

a. Testing Requirements: The Permittee shall conduct performance tests on the emissions control devices as specified in the Permit Conditions below, according to the following testing intervals:

5-year performance testing shall be conducted within 58-62 months of the previous test.

Annual testing shall be conducted within 10-14 months of the previous test.

Quarterly testing shall be conducted by the end of each calendar quarter (i.e. March 31, June 30, September 30, and December 31).

Annual or quarterly testing conducted to comply with Permit Condition 42 shall satisfy the requirements of performance testing conducted on a 5 year basis, if applicable.

Unless previously tested, the Permittee shall conduct performance tests 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.

[County Rule 270 §401][SIP Rule 27 §A][County Rule 210 §302.1(c)(2)]

i. Wet Acid Scrubbers:

The wet acid scrubbers in Fab 12, 32S, 32, 42,52 and 62 shall be tested as specified in Table 6 and the Permit Conditions below.

Table 6: Testing Requirements for Wet Acid Scrubbers

Test Type[1]	Inlet Testing	Outlet Testing	Test Methods[2]	Test Results	Clarifications
Startup & 5-year Performance Testing	HCl	HCl	EPA Test Methods 26, 26A, 320, ASTM D6348-12	Pass Criteria 1: 90% removal efficiency by weight for HCl; or Pass Criteria 2: Outlet concentration for HCl < 1 ppmv	HCl inlet testing is not required when using < 1 ppmv outlet concentration limit, per Permit Condition 7.b.
Annual Testing	None	VOC	EPA Test Methods 25, 25A, 320, ASTM D6348-12	Test results shall be quantified and used to calculate the 12-month rolling total emissions for Fab 12, Fab 32S/32, Fab 42, Fab 52 and/or Fab 62. VOCs detected will be quantified and added to the 12-month rolling 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 uncontrolled emissions.	Methane and ethane can be subtracted from total VOC using ASTM D6348-12, EPA Test Method 320, or an alternative EPA-approved test method approved by the Control Officer. Testing shall demonstrate compliance with all applicable emission limits in Permit Condition **1**. Testing shall demonstrate compliance with VOC emission limits for Fab 52 and Fab 62 wet acid scrubbers in Permit Condition 7.c. Annual testing could serve as a basis for determining emission rates of other pollutants.
	None	HCl	EPA Test Methods 26, 26A, 320, ASTM D6348-12		
	None	HF	EPA Test Methods 26, 26A, 320, ASTM D6348-12		
	None	PM_{10}/$PM_{2.5}$	EPA Test Methods 201A and 202 (EPA Test Method 5 may be substituted for EPA Test Method 201A if the Permittee agrees to assume that all particulates are PM_{10}/$PM_{2.5}$)		
	None	Total PM	EPA Test Method 5		
	None	CO	EPA Test Methods 10, 320, ASTM D6348-12		
	None	NO_X	EPA Test Methods 7E, 320, ASTM D6348-12		

[1]Testing intervals are given in Permit Condition 41.a
[2]These test methods or other EPA-approved test methods as approved by the Control Officer.

1) 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

2) In the event that the emissions testing required by this Condition for the wet acid scrubber systems does not demonstrate the required removal efficiency, as an alternative, the Permittee shall demonstrate compliance with an outlet concentration of 1 ppmv or less of the appropriate constituent.

[County Rule 210 §302.1(c)(2)]

ii. Ammonia Scrubbers:
The ammonia scrubbers in Fab 12, 32S, 32, 42, 52 and 62 shall be tested as specified in Table 7 and the Permit Conditions below.

Table 7: Testing Requirements for Ammonia Scrubbers

Test Type[1]	Inlet Testing	Outlet Testing	Test Methods[2]	Test Results	Clarifications
Annual Testing	None	VOC	EPA Test Methods 25, 25A, 320, ASTM D6348-12	Test results shall be quantified and used to calculate the 12-month rolling total emissions for Fab 12, Fab 32S/32, Fab 42, Fab 52, and/or Fab62. VOCs detected will be quantified and added to the 12-month rolling 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 uncontrolled emissions.	Methane and ethane can be subtracted from total VOC using ASTM D6348-12, EPA Test Method 320, or an alternative EPA-approved test method approved by the Control Officer. Testing shall demonstrate compliance with all applicable emission limits in Permit Condition **1**. Testing shall demonstrate compliance with VOC emission limits for Fab 52 and Fab 62 ammonia scrubbers in Permit Condition 7.c.
		NOx	EPA Test Methods 7E, 320, ASTM D6348-12		

[1]Testing intervals are given in Permit Condition 41.a
[2]These test methods or other EPA-approved test methods as approved by the Control Officer.

iii. RCTO VOC Abatement Units:

The RCTO VOC abatement units in Fab 12, 32S, 32, 42, 52, and 62 shall be tested as specified in Table 8 and the Permit Conditions below.

Table 8: Testing Requirements for RCTO VOC Abatement Units

Test Type[1]	Inlet Testing	Outlet Testing	Test Methods[2]	Test Results	Clarifications
Startup & 5-year Performance Testing	VOC (Optional)	VOC	EPA Test Methods 25, 25A, 320, ASTM D6348-12	Pass criteria specified in Permit Condition 7.a.i.	VOC inlet testing is not required when meeting the VOC outlet concentration limit of < 10 ppmv measured as methane, per Permit Condition 7.a.i.4). VOC exhaust testing is required at outlets of both the concentrator and oxidizer stacks, if applicable.
	None	CO	EPA Test Methods 10, 320, ASTM D6348-12	Pass criteria specified in Permit Condition 19.b.	CO and NO_X testing is only required at the outlet of the oxidizer stacks.
	None	NO_X	EPA Test Methods 7E, 320, ASTM D6348-12		
Annual Testing	None	VOC	EPA Test Methods 25, 25A, 320, ASTM D6348-12	Test results shall be quantified and used to calculate the 12-month rolling total emissions for Fab 12, Fab 32S/32, Fab 42, Fab 52, and/or Fab 62.	Testing shall demonstrate compliance with all applicable emission limits in Permit Conditions 2.a, 2.b, and 7.a.i.
	None	$PM_{10}/PM_{2.5}$	EPA Test Methods 201A and 202 (EPA Test Method 5 may be substituted for EPA Test Method 201A if the Permittee agrees to assume that all particulates are $PM_{10}/PM_{2.5}$)		
	None	Total PM	EPA Test Method 5		
	None	CO	EPA Test Methods 10, 320, ASTM D6348-12		
	None	NO_X	EPA Test Methods 7E, 320, ASTM D6348-12		

[1]Testing intervals are given in Permit Condition 41.a
[2]These test methods or other EPA-approved test methods as approved by the Control Officer.

1) 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.

2) The Permittee may perform additional monitoring via FTIR or a methane/non-methane hydrocarbon analyzer to quantify the methane and ethane portion of the total hydrocarbons and subtract this portion.

3) Total hydrocarbon results shall be reported as propane. If requested by MCAQD, the Permittee shall estimate the average molecular weight of compounds in the VOC inlet stream to each Fab Oxidizer in each testing protocol submitted. If requested by MCAQD, 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 and outlet stream(s) of the VOC abatement unit as possible.

[County Rule 210 §302.1(c)(2)]

iv. BSSW Thermal Oxidizer:

The BSSW thermal oxidizer unit in Fab 32S shall be tested as specified in Table 9.

Table 9: Testing Requirements for BSSW Thermal Oxidizer

Test Type[1]	Inlet Testing	Outlet Testing	Test Methods[2]	Test Results	Clarifications
Startup & 5-year Performance Testing	VOC (optional)	VOC	EPA Test Methods 25, 25A, 320, ASTM D6348-12	Pass criteria specified in Permit Condition 7.a.i.	VOC inlet testing is not required when meeting the VOC outlet concentration limit of < 10 ppmv measured as methane, per Permit Condition 7.a.i.4)
[1]Testing intervals are given in Permit Condition 41.a [2]These test methods or other EPA-approved test methods as approved by the Control Officer.					

v. Boilers and Vaporized Natural Gas-Fired Heaters:

The boilers in Fab 12, 32S, 32, and 42 and the ASU vaporized natural gas-fired heaters shall be tested as specified in Table 10 and the Permit Conditions below:

Table 10: Boiler and Vaporized Natural Gas-Fired Heater Testing Requirements

Test Type[1]	Inlet Testing	Outlet Testing	Test Methods[2]	Test Results	Clarifications
Startup & 5-year Performance Testing	None	CO	EPA Test Methods 10, 320, ASTM D6348-12	Testing shall serve as a basis for determining emission rates and pass criteria specified in Permit Condition 19.a	Testing shall measure the concentrations of NO_X and CO in the boiler exhaust stream. NO_X and CO test results shall be corrected to 3% O_2.
	None	NO_X	EPA Test Methods 7E, 320, ASTM D6348-12		
	None	VOC	EPA Test Methods 25A, ASTM D6348-12	Testing shall serve as a basis for determining emission rates and pass criteria for Fab 52 and Fab 62 specified in Permit Condition 18.f	VOC testing requirement only applicable to Fab 52 and Fab 62 boilers.
[1]Testing intervals are given in Permit Condition 41.a [2]These test methods or other EPA-approved test methods as approved by the Control Officer.					

1) The Permittee shall test any new boiler or vaporized natural gas-fired heater 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 test a representative sample of each group of boilers/vaporized natural gas-fired heaters identified below at least once every 5 years (within 58 to 62 months of the previous test). The selection of the boiler/vaporized natural gas-fired heater to be tested shall be different than a previously tested boiler/vaporized natural gas-fired heater. Once all boilers/vaporized natural gas-fired heaters have been tested, the Permittee can start testing previously selected boilers/vaporized natural gas-fired heaters but shall select the boiler/vaporized natural gas-fired heater that has not been tested in the longest amount of time to ensure adequate representation. The selection of the boiler/vaporized natural gas-fired heater to be tested from each group may initially be requested by the Permittee and included in the test protocol for review. However, MCAQD reserves the right to modify any boiler/vaporized natural gas-fired heater selection as warranted.

Table 11: Boiler/Vaporized Natural Gas-Fired Heater Groups

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 32S Boilers – Group 5	Two [TBD] 33.5 MMBtu/hr
Fab 32 Boilers – Group 6	One Johnston 10.5 MMBtu/hr
Fab 42 Boilers – Group 7	Three Cleaver Brooks 29.39 MMBtu/hr
Fab 42 Boilers – Group 8	One Cleaver Brooks 14.3 MMBtu/hr
ASU Vaporized Natural Gas-Fired Heaters – Group 9	Two [TBD] 59MMBtu/hr
Fab 52/62 Boilers – Group 10	Seven [TBD] 29.39 MMBtu/hr
Fab 52/62 Boiler – Group 11	One [TBD] 14.29 MMBtu/hr

3) The Permittee shall record the steam temperature, steam pressure and percent fire during the performance test for steam boilers. These and any additional operational parameters shall be identified in the test protocol and recorded during testing.

[County Rule 210 §302.1(c)(2)]

vi. TRMX Treatment Systems:

The TRMX treatment systems in Fab 32S/32, Fab 42, Fab 52, and Fab 62 shall be tested as specified in Table 12 and the Permit Conditions below.

Table 12: Testing Requirements for TRMX Treatment Systems

Test Type[1]	Inlet Testing	Outlet Testing	Test Methods[2]	Test Results	Clarifications
Startup & 5-year Performance Testing	None	CO	EPA Test Methods 10, 320, ASTM D6348-12	Testing shall serve as a basis for determining emission rate only.	
	None	NO_X	EPA Test Methods 7E, 320, ASTM D6348-12	Testing shall serve as a basis for determining emission rate and pass criteria specified in Permit Condition 21.c.	

[1]Testing intervals are given in Permit Condition 41.a
[2]These test methods or other EPA-approved test methods as approved by the Control Officer.

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 test a representative sample of each group of TRMX Treatment Systems identified below at least once every 5 years (within 58 to 62 months of the previous test). 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 for review. However, MCAQD reserves the right to modify any TRMX Treatment System selection as warranted.

Table 13: TRMX Groups

TRMX Grouping	Representative Sample
Group 1	Fab 32S/32 – Trimix A
	Fab 32S/32 – Trimix B
Group 2	Fab 42 – Trimix 1
Group 3	Fab 52 – Trimix 1
	Fab 62 – Trimix 1

[County Rule 210 §302.1(c)(2)]

vii. Generators:

1) If the Permittee chooses not to use either manufacturer's EF data or AP-42 EFs, then the Permittee shall test each generator.

2) The Permittee shall test each unit for mass emission rates for NO_X, carbon monoxide and PM_{10} (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 chooses to use Manufacturer's EF data or AP-42 EFs as described in Permit Condition 41.a.vii.1) above.

[County Rule 210 §302.1(c)(2)]

b. 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 affected facilities, only EPA has the authority to waive initial testing requirements.

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

c. 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. For NSPS affected facilities, only EPA has the authority to approved alternative test methods that are not allowed under the NSPS regulation.

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

d. 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]

e. 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.

f. 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 most recent version of "Air Quality Performance Test Guidelines for Compliance Determination in Maricopa County". A completed copy of MCAQD's "Test Protocol Submittal Form" shall accompany each test protocol.

[County Rule 210 §302.1(c)(2)]

g. 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]

h. 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)]

i. 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 an alternative approach proposed in a test protocol, as required in permit condition 41.f, and approved by MCAQD. 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.

[Rule 270 §406][40 CFR §60.8(f)]

j. The performance testing shall include a test method performance audit (PA) during the performance test consistent with the requirements outlined in 40 CFR §60.8(g). The PAs consist of blind audit samples supplied by an accredited audit sample provider and analyzed during the performance test in order to provide a measure of test data bias. An accredited audit sample provider (AASP) is an organization that has been accredited to prepare audit samples by an independent, third party accrediting body.

The source owner, operator, or representative of the tested facility shall obtain an audit sample, if commercially available, from an AASP for each test method used for regulatory compliance purposes. No audit samples are required for the following test methods: Methods 3A and 3C of appendix A-3 of part 60, Methods 6C, 7E, 9, and 10 of appendix A-4 of part 60, Methods 18 and 19 of appendix A-6 of part 60, Methods 20, 22, and 25A of appendix A-7 of part 60, Methods 30A and 30B of appendix A-8 of part 60, and Methods 303, 318, 320, and 321 of appendix A of part 63 of this chapter.

[40 CFR §60.8(g)]

k. Test Report Submittal: The Permittee shall complete and submit a separate test report for each performance test to MCAQD within 60 days after the completion of testing. The test report shall be prepared in accordance with MCAQD's most recent version of "Air Quality Performance Test Guidelines for Compliance Determination in Maricopa County". A completed copy of MCAQD's

"Test Report Submittal Form" shall accompany each test report.

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

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 used for compliance with Permit Condition 2.a shall be used for annual emissions inventory purposes if the Permittee is required to complete an emissions inventory survey.

[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. 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 270 §402.5]

GENERAL CONDITIONS

42. Air Pollution Prohibited:

The Permittee shall not discharge from any source whatever into the atmosphere regulated air pollutants which exceed in quantity or concentration that specified and allowed in the County or SIP Rules, the Arizona Administrative Code (AAC) or the Arizona Revised Statutes (ARS), or which cause damage to property or unreasonably interfere with the comfortable enjoyment of life or property of a substantial part of a community, or obscure visibility, or which in any way degrade the quality of the ambient air below the standards established by the Maricopa County Board of Supervisors or the Director of the Arizona Department of Environmental Quality (ADEQ).

[SIP Rule 100 §301]

43. Circumvention:

The Permittee shall not build, erect, install, or use any article, machine, equipment, condition, or any contrivance, the use of which, without resulting in a reduction in the total release of regulated air pollutants to the atmosphere, conceals or dilutes an emission which would otherwise constitute a violation of this Permit or any Rule or any emission limitation or standard. The Permittee shall not circumvent the requirements concerning dilution of regulated air pollutants by using more emission openings than is considered normal practice by the industry or activity in question.

[SIP Rule 100 §104]

44. Certification of Truth, Accuracy, and Completeness:

Any application form, report, or compliance certification submitted under County or Federal Rules or these Permit Conditions shall contain certification by a responsible official of truth, accuracy, and completeness of the application form or report as of the time of submittal. This certification and any other certification required under County or Federal Rules or these Permit Conditions shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

[SIP Rule 100 §401] [SIP Rule 210 §§301.7 & 305.1(e)]

45. Compliance Required:

a. The Permittee shall comply with all conditions of this permit and with all applicable requirements of Arizona air quality statutes and the air quality rules. Compliance with permit terms and conditions does not relieve, modify, or otherwise affect the Permittee's duty to comply with all applicable requirements of Arizona air quality statutes and the Maricopa County Air Pollution Control Regulations. Any permit noncompliance is grounds for enforcement action; for a permit termination, revocation and reissuance, or revision; or for denial of a permit renewal application. Noncompliance with any federally enforceable requirement in this Permit constitutes a violation of the Act.

[SIP Rule 210 §§301.8(b)(4) & 302.1(h)(1)]

b. The Permittee shall halt or reduce the permitted activity in order to maintain compliance with applicable requirements of Federal laws, Arizona laws, the County Rules, or other conditions of this Permit.

[SIP Rule 210 §302.1(h)(2)]

c. For any major source operating in a nonattainment area for any pollutant(s) for which the source is classified as a major source, the source shall comply with reasonably available control technology (RACT) as defined in Rule 100.

[SIP Rule 210 §302.1(h)(6)]

d. For any major source operating in a nonattainment area designated as serious for PM_{10}, for which the source is classified as a major source for PM10, the source shall comply with the best available control technology (BACT), as defined in Rule 100 for PM_{10}.

[SIP Rule 210 §302.1(h)(7)]

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.

[SIP Rule 200 §409][Rule 280 §302][SIP Rule 210 §401] [SIP Rule 28][A.R.S. 49-480(D)]

f. COMPLIANCE PLAN:
Based on the certified information contained in the application for this Permit, the facility is in compliance with all applicable requirements in effect as of the first date of public notice of the proposed conditions for this Permit unless a Compliance Plan is included in the Specific Conditions of this Permit. The Permittee shall continue to comply with all applicable requirements and shall meet any applicable requirements that may become effective during the term of this permit on a timely basis.

[SIP Rule 210 §305.1(g)]

46. Confidentiality Claims:

Any records, reports or information obtained from the Permittee under the County Rules or this Permit shall be available to the public, unless the Permittee files a claim of confidentiality in accordance with ARS §49-487(c) that:

a. Precisely identifies the information in the permit(s), records, or reports that is considered confidential, and

b. Provides sufficient supporting information to allow the Control Officer to evaluate whether such information satisfies the requirements related to trade secrets or, if applicable, how the information, if disclosed, could cause substantial harm to the person's competitive position. The claim of confidentiality is subject to the determination by the Control Officer as to whether the claim satisfies these requirements.

A claim of confidentiality shall not excuse the Permittee from providing any and all information required or requested by the Control Officer and shall not be a defense for failure to provide such

information.

If the Permittee submits information with an application under a claim of confidentiality pursuant to ARS §49-487 and Rule 200, the Permittee shall submit a copy of such information directly to the Administrator of the USEPA.

[SIP Rule 100 §402] [SIP Rule 200 §411] [SIP Rule 210 §301.5]

47. Contingent Requirements:

NOTE: This Permit Condition covers activities and processes addressed by the CAA which may or may not be present at the facility.

a. ASBESTOS:
The Permittee shall comply with the applicable requirements of 40 CFR §§ 61.145 through 61.147 and 61.150 of the National Emission Standard for Asbestos and Rule 370 for all demolition and renovation projects.

[40 CFR Part 61 Subpart M] [Rule 370 §301.9]

b. RISK MANAGEMENT PLAN (RMP):
Should this stationary source, as defined in 40 CFR 68.3, be subject to the accidental release prevention regulations in 40 CFR Part 68, then the Permittee shall submit an RMP by the date specified in Section 68.10 and shall certify compliance with the requirements of Part 68 as part of the annual compliance certification as required by 40 CFR Part 70. However, neither the RMP nor modifications to the RMP shall be considered to be a part of this Permit.

[40 CFR Part 68]

c. STRATOSPHERIC OZONE PROTECTION:
If applicable, the Permittee shall follow the requirements of 40 CFR 82.100 through 82.124 with respect to the labeling of products using ozone depleting substances.

If applicable, the Permittee shall comply with all of the following requirements with respect to recycling and emissions reductions for Class I and Class II Refrigerants and their substitutes:

i. All Persons opening and disposing of appliances for maintenance, service, repair, or disposal must comply with the required practices pursuant to 40 CFR 82.156.

ii. Equipment used during maintenance, service, repair, or disposal of appliances must meet the standards for recycling and recovery equipment in accordance with 40 CFR 82.158.

iii. Equipment testing organizations must comply with 40 CFR 82.160.

iv. Persons performing maintenance, service, repair, or disposal of appliances must be certified pursuant to 40 CFR 82.161.

v. Certification requirements of 40 CFR 82.162 and 82.164, as applicable.

vi. Reporting and Recordkeeping requirements in 40 CFR 82.166.

If applicable, the Permittee shall follow the requirements of 40 CFR Part 82 Subpart G, including all Appendices, with respect to the safe alternatives policy on the acceptability of substitutes for ozone-depleting compounds.

[40 CFR Part 82 Subparts E, F, and G]

48. Duty to Supplement or Correct Application:

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 it filed a complete application but prior to release of a proposed permit.

[SIP Rule 210 §301.6]

49. Emergency Episodes:
If an air pollution alert, warning, or emergency has been declared, the Permittee shall comply with any applicable requirements of Rule 600 §302.
[Rule 600 §302] [SIP Rule 600 §302]

50. Emergency Provisions:
An "emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, that requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under this permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.
[Rule 130 §201]

51. Excess Emissions:
There are reporting requirements associated with excess emissions. These requirements are contained in Permit Condition 57.f in a subparagraph called Excess Emissions Reporting. The definition of excess emissions can be found in Rule 100 §200.
[Rule 140 §500] [SIP Rule 140]

52. Fees:
The Permittee shall pay fees to the Control Officer pursuant to ARS §49-480(D) and Rule 280.
[SIP Rule 200 §409] [SIP Rule 210 §§302.1(i) and §401]

53. Modeling:
The Permittee shall perform any required modeling in a manner consistent with 40 CFR 51, Appendix W, "Guideline on Air Quality Models". For minor New Source Review, the Permittee shall perform air quality impact modeling in a manner consistent with “MCAQD Minor New Source Review Air Dispersion Modeling Guideline”. Where the person can demonstrate that an air quality impact model specified in the guideline is inappropriate, the model may be modified or another model substituted if found to be acceptable to the Control Officer.
[40 CFR Part 51 App. W] [SIP Rule 200 §407] [SIP Rule 26]

54. Monitoring and Testing:

a. MONITORING REQUIRED: The Permittee shall monitor, sample, or perform other studies to quantify emissions of regulated air pollutants or levels of air pollution that may reasonably be attributable to the facility if required to do so by the Control Officer, either by Permit or by order in accordance with Rule 200 §310.
[SIP Rule 200 §310] [SIP Rule 41.A]

b. TESTING REQUIRED: Except as otherwise specified in these Permit Conditions or by the Control Officer, the Permittee shall conduct required testing used to determine compliance with standards or permit conditions established pursuant to the County or SIP Rules or these Permit Conditions in accordance with Rule 270 and the applicable testing procedures contained in the Arizona Testing Manual for Air Pollutant Emissions or other approved USEPA test methods.
[SIP Rules 200 §408; 210 §302.1.(c); Rules 270 §§300 and 400] [SIP Rule 27]

c. TESTING FACILITIES: The Permittee shall provide, or cause to be provided, performance testing facilities as follows:

i. Sampling ports adequate for test methods applicable to such source.

ii. Safe sampling platform(s).

iii. Safe access to sampling platforms(s).

iv. Utilities for sampling and testing equipment.

[Rule 270 §405] [SIP Rule 42]

55. Permits:

a. BASIC:
This 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.

[SIP Rule 210 §302.1(h)(3)]

b. PERMITS AND PERMIT CHANGES, AMENDMENTS AND REVISIONS:

i. The Permittee shall comply with the Administrative Requirements of Section 400 of Rule 210 for all changes, amendments and revisions at the facility for any source subject to regulation under Rule 200, shall comply with all required time frames, and shall obtain any required preapproval from the Control Officer before making changes. All applications shall be filed in the manner and form prescribed by the Control Officer. The application shall contain all the information necessary to enable the Control Officer to make the determination to grant or to deny a permit or permit revision including information listed in Rule 200 §309 and Rule 210 §301.

[SIP Rule 200 §§301 & 309] [SIP Rule 210 §§301 & 400]

ii. The Permittee shall supply a complete copy of each application for a permit, a minor permit revision, or a significant permit revision directly to the Administrator of the USEPA. The Control Officer may require the application information to be submitted in a computer-readable format compatible with the Administrator's national database management system.

[SIP Rule 210 §§303.1(a) & 303.2]

iii. While processing an application, the Control Officer may require the applicant to provide additional information and may set a reasonable deadline for a response. If, while processing an application that has been determined or deemed to be complete, the Control Officer determines that additional information is necessary to evaluate or to take final action on that application, the Control Officer may request such information in writing and may set a reasonable deadline for a response.

[SIP Rule 210 §301.4(f)]

iv. No permit revision shall be required pursuant to any approved economic incentives, marketable permits, emissions trading and other similar programs or processes for changes that are provided for in this permit.

[SIP Rule 210 §302.1(j)]

c. POSTING:

i. The Permittee shall keep a complete permit clearly visible and accessible on the site where the equipment is installed.

[SIP Rule 200 §312]

ii. Any approved Dust Control Plan or Dust Control Permit required by Rule 310 shall be posted in a conspicuous location at the work site, within on-site equipment, or in an on-site vehicle, or shall otherwise be kept available on site at all times.

[Rule 310 §409] [SIP Rule 310 §409]

d. PROHIBITION ON PERMIT MODIFICATION:
The Permittee shall not willfully deface, alter, forge, counterfeit, or falsify this permit.

[SIP Rule 200 §311]

e. RENEWAL:

i. The Permittee shall submit an application for the renewal of this Permit in a timely and

complete manner. The Permittee shall file all permit applications in the manner and form prescribed by the Control Officer. For purposes of permit renewal, a timely application is one that is submitted at least six months, but not more than 18 months, prior to the date of permit expiration. A complete application shall contain all of the information required by the County Rules including Rule 200 §309 and Rule 210 §§301 & 302.3.

[SIP Rule 200 §309] [SIP Rule 210 §§301 and 302]

ii. If the Permittee submits a timely and complete application for a permit renewal, but the Control Officer has failed to issue or deny the renewal permit before the end of the term of the previous permit, then the permit shall not expire until the renewal permit has been issued or denied. This protection shall cease to apply if, subsequent to the completeness determination, the Permittee fails to submit, by the deadline specified in writing by the Control Officer, any additional information identified as being needed to process the application.

[SIP Rule 200 §403.2] [SIP Rule 210 §§301.4(f) and 301.9]

f. REVISION / REOPENING / REVOCATION:

i. If the Permittee becomes subject to a standard promulgated by the Administrator under Section 112(d) of the CAA, the Permittee shall, within 12 months of the date on which the standard was promulgated, submit an application for a permit revision demonstrating how the source will comply with the standard.

[SIP Rule 210 §301.2(c)]

ii. This permit shall be reopened and revised to incorporate additional applicable requirements adopted by the Administrator pursuant to the CAA that become applicable to the facility if this permit has a remaining permit term of three or more years and the facility is a major source. Such a reopening shall be completed not later than 18 months after promulgation of the applicable requirement. No such reopening is required if the effective date of the requirement is later than the date on which this Permit is due to expire unless the original permit or any of its terms have been extended pursuant to Rule 200 §403.2.

[SIP Rule 200 §402.1(a)(1)]

Any permit revision required pursuant to this Permit Condition, 55.f.ii, shall reopen the entire permit, shall comply with provisions in Rule 200 for permit renewal, and shall reset the five year permit term.

[SIP Rule 200 §402.1(a)(1)] [SIP Rule 210 §302.5]

iii. This permit shall be reopened and revised under any of the following circumstances:

1) Additional requirements, including excess emissions requirements, become applicable to an affected source under the acid rain program. Upon approval by the Administrator, excess emissions offset plans shall be deemed to be incorporated into the Title V permit.

2) The Control Officer or the Administrator determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit.

3) The Control Officer or the Administrator determines that the permit must be revised or revoked to assure compliance with the applicable requirements.

Proceedings to reopen and issue a permit under this Permit Condition, 55.f.iii, shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of the Permit for which cause to reopen exists.

[SIP Rule 200 §402.1]

iv. This permit shall be reopened by the Control Officer and any permit shield revised when it is determined that standards or conditions in the permit are based on incorrect information

provided by the applicant.

[SIP Rule 210 §407.3]

g. REQUIREMENTS FOR A PERMIT:

i. Except as noted in Sections 403 and 405 of County Rule 210, no source may operate after the time that it is required to submit a timely and complete application, except in compliance with a permit issued under Rule 210. Permit expiration terminates the Permittee's right to operate. However, if a source submits a timely and complete application, as defined in Rule 210 §301.4, for permit issuance or renewal, the source's failure to have a permit is not a violation of the County Rules until the Control Officer takes final action on the application. The Source's ability to operate without a permit as set forth in this paragraph shall be in effect from the date the application is determined to be complete until the final permit is issued. This protection shall cease to apply if, subsequent to the completeness determination, the applicant fails to submit, by the deadline specified in writing by the Control Officer, any additional information identified as being needed to process the application.

[SIP Rule 210 §301.9]

ii. A subcontractor who is engaged in dust-generating operations at a site that is subject to a Dust Control Permit shall register with the Control Officer and follow those registration requirements in Rule 200.

[SIP Rule 200 §§306 & 307]

iii. Burn Permit: The Permittee shall obtain a Permit To Burn from the Control Officer before conducting any open outdoor fire except for the activities listed in Rule 314 §303.

[Rule 314] [Rule 200 §308] [SIP Rule 314]

h. RIGHTS AND PRIVILEGES:
This Permit does not convey any property rights nor exclusive privilege of any sort.

[SIP Rule 210 §302.1(h)(4)]

i. SEVERABILITY:
The provisions of this Permit are severable, and, if any provision of this Permit is held invalid, the remainder of this Permit shall not be affected thereby.

[SIP Rule 210 §302.1(g)]

j. SCOPE:
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.

[SIP Rule 200 §309]

Nothing in this permit shall alter or affect the following:

i. The provisions of Section 303 of the Act, including the authority of the Administrator pursuant to that section.

ii. The liability of the Permittee for any violation of applicable requirements prior to or at the time of permit issuance.

iii. The applicable requirements of the acid rain program, consistent with Section 408(a) of the Act.

iv. The ability of the Administrator of the USEPA or of the Control Officer to obtain information from the Permittee pursuant to Section 114 of the Act, or any provision of State law.

v. The authority of the Control Officer to require compliance with new applicable requirements adopted after the permit is issued.

[SIP Rule 210 §407.2]

k. TERM OF PERMIT:
This Permit shall remain in effect for no more than 5 years from the date of issuance.
[SIP Rule 210 §§302.1(a) & 402]

l. TRANSFER:
Except as provided in ARS §49-429 and Rule 200, this permit may be transferred to another person if the Permittee gives notice to the Control Officer in writing at least 30 days before the proposed transfer and complies with the permit transfer requirements of Rule 200 and the administrative permit amendment procedures pursuant to Rule 210.
[SIP Rule 200 §404] [SIP Rule 210 §404]

56. Recordkeeping:

a. RECORDS REQUIRED:
The Permittee shall maintain records of all emissions testing and monitoring, records detailing all malfunctions which may cause any applicable emission limitation to be exceeded, records detailing the implementation of approved control plans and compliance schedules, records required as a condition of any permit, records of materials used or produced and any other records relating to the emission of air contaminants which may be requested by the Control Officer.
[SIP Rule 100 §501]

b. RETENTION OF RECORDS:
Unless a longer time frame is specified by the Rules or these Permit Conditions, the Permittee shall retain information and records required by either the Control Officer or these Permit Conditions as well as copies of summarizing reports recorded by the Permittee and submitted to the Control Officer for 5 years after the date on which the pertinent report is submitted.
[SIP Rule 100 §504]

c. MONITORING RECORDS:
The Permittee shall retain records of all required monitoring data and support information for a period of at least five years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings or physical records for continuous monitoring instrumentation, and copies of all reports required by the permit. Records of any monitoring required by this Permit shall include the following:

i. The date, place as defined in the permit, and time of sampling or measurements;

ii. The date(s) analyses were performed;

iii. The company or entity that performed the analyses;

iv. The analytical techniques or methods used;

v. The results of such analyses; and

vi. The operating conditions as existing at the time of sampling or measurement.
[SIP Rule 210 §§302.1(d) and 305.1(b)]

d. RIGHT OF INSPECTION OF RECORDS:
When the Control Officer has reasonable cause to believe that the Permittee has violated or is in violation of any provision of Rule 100 or any County Rule adopted under Rule 100, or any requirement of this permit, the Control Officer may request, in writing, that the Permittee produce all existing books, records, and other documents evidencing tests, inspections, or studies which may reasonably relate to compliance or noncompliance with County Rules adopted under Rule 100. No person shall fail nor refuse to produce all existing documents required in such written request by the Control Officer.

[SIP Rule 100 §106] [SIP Rule 40.D]

57. Reporting:

NOTE: See Permit Condition 44in conjunction with reporting requirements.

a. ANNUAL EMISSION INVENTORY REPORT:
Upon request of the Control Officer and as directed by the Control Officer, the Permittee shall complete and shall submit to the Control Officer an annual emissions inventory report. The report is due by April 30 or 90 days after the Control Officer makes the inventory forms available, whichever occurs later. The annual emissions inventory report shall be in the format provided by the Control Officer. The Control Officer may require submittal of supplemental emissions inventory information forms for air contaminants under ARS §49-476.01, ARS §49-480.03.
[SIP Rule 100 §505]

b. DATA REPORTING:
When requested by the Control Officer, the Permittee shall furnish information to locate and classify air contaminant sources according to type, level, duration, frequency and other characteristics of emissions and such other information as may be necessary. This information shall be sufficient to evaluate the effect on air quality and compliance with the County or SIP Rules. The Permittee may be required to submit annually, or at such intervals specified by the Control Officer, reports detailing any changes in the nature of the source since the previous report and the total annual quantities of materials used or air contaminants emitted.
[SIP Rule 100 §502]

c. DEVIATION REPORTING:
The Permittee shall promptly report deviations from permit requirements, including those attributable to upset conditions. Unless specified otherwise elsewhere in these Permit Conditions, an upset for the purposes of this Permit Condition shall be defined as the operation of any process, equipment or air pollution control device outside of either its normal design criteria or operating conditions specified in this Permit and which results in an exceedance of any applicable emission limitation or standard.

i. For emissions in excess of permit requirements, the Permittee shall notify the Control Officer by email, telephone, or facsimile within 24 hours of knowledge of the deviation. A detailed written deviation report shall be submitted within 72 hours of the notification.

ii. All other deviations that do not result in an exceedance of any applicable emission limitation or standard shall be documented in the same manner, promptly logged in the facility records within 2 working days and included in the next semiannual monitoring report.

The report and documentation in the log shall contain a description of the probable cause of such deviations and any corrective actions or preventive measures taken. In addition, the Permittee shall report within a reasonable time any long-term corrective actions or preventive actions taken as the result of any deviations from permit requirements if applicable. All instances of deviations from the requirements of this Permit shall be clearly identified in the semiannual monitoring reports.
[SIP Rule 210 §302.1(e)] [Rule 140 §500] [SIP Rule 140]

d. EMERGENCY REPORTING:
The Permittee shall, as soon as possible, telephone the Control Officer giving notice of the emergency and submit notice of the emergency to the Control Officer by certified mail, facsimile, or hand delivery within 2 working days of the time when emission limitations were exceeded due to the emergency. This notice shall contain a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken.
[Rule 130 §402.4]

e. EMISSION STATEMENTS REQUIRED AS STATED IN THE ACT:

Upon request of the Control Officer and as directed by the Control Officer, the Permittee shall provide the Control Officer with an annual emission statement, in such form as the Control Officer prescribes, showing measured actual emissions or estimated actual emissions. At a minimum the emission statement shall contain all information required by the Consolidated Emissions Reporting Rule in 40 CFR Part 51, Subpart A, Appendix A, Table 2A. The statement shall contain emissions for the time period specified by the Control Officer. The statement shall also contain a certification by a responsible official of the company that the information contained in the statement is accurate to the best knowledge of the individual certifying the statement.

[SIP Rule 100 §503]

f. EXCESS EMISSIONS REPORTING:
(NOTE: This reporting subsection is associated with Permit Condition 51 entitled "Excess Emissions".)

i. The Permittee shall report to the Control Officer any emissions in excess of the limits established either by the County or SIP Rules or these Permit Conditions. The report shall be in two parts as specified below:

1) Notification by email, telephone or facsimile within 24 hours of the time when the Permittee first learned of the occurrence of excess emissions. This notification shall include all available information listed in Permit Condition 57.f.ii.

2) A detailed written notification of an excess emissions report shall be submitted within 72 hours of the telephone notification in Permit Condition 57.f.i.1).

ii. The excess emissions report shall contain the following information:

1) The identity of each stack or other emission point where the excess emissions occurred.

2) The magnitude of the excess emissions expressed in the units of the applicable emission limitation and the operating data and calculations used in determining the magnitude of the excess emissions.

3) The time and duration or expected duration of the excess emissions.

4) The identity of the equipment from which the excess emissions emanated.

5) The nature and cause of such emissions.

6) The steps taken if the excess emissions were the result of a malfunction to remedy the malfunction and the steps taken or planned to prevent the recurrence of such malfunction.

7) The steps that were or are being taken to limit the excess emissions.

8) If this Permit contains procedures governing source operation during periods of startup or malfunction and the excess emissions resulted from startup or malfunction, the report shall contain a list of the steps taken to comply with the permit procedures.

iii. In the case of continuous or recurring excess emissions, the notification requirements of this section shall be satisfied if the Permittee provides the required notification after excess emissions are first detected and includes in the notification an estimate of the time the excess emissions will continue. Excess emissions occurring after the estimated time period or changes in the nature of the emissions as originally reported shall require additional notification that meets the criteria of this Permit Condition.

[Rule 140 §500] [SIP Rule 140]

g. OTHER REPORTING:
The Permittee shall furnish to the Control Officer, within a reasonable time, any 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. 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 pursuant to Permit Condition 46.

[SIP Rule 210 §302.1(h)(5)]

58. Right to Entry and Inspection of Premises:

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 authorized representative, upon presentation of proper credentials 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. Record any inspection by use of written, electronic, magnetic, and photographic media.

[SIP Rule 100 §105] [SIP Rule 210 §305.1(f)] [SIP Rule 43]

APPENDIX A: EQUIPMENT LIST

Equipment List							
Intel Corporation - Ocotillo Campus							
Facility ID F000701 Permit Number - P0006742							
S. No	**Fab**	**Name**	**Identification**	**Make**	**Model**	**Mfd Date**	**Capacity**
BOILERS							
1	F12	Boiler 1	BLR-32-GD3-1	Johnston	PFTX-1200-3-XID-G-125S	2012	51.7 MMBtu/Hr
2	F12	Boiler 2	BLR-32-GD3-2	Superior	MODEL 6-5-6250	1995	52.5 MMBtu/Hr
3	F12	Boiler 3	BLR-32-GD3-3	Superior	MODEL 6-5-6250	1995	52.5 MMBtu/Hr
4	F12	Boiler 4	BLR-32-GD3-4	Superior	MODEL 6-5-6250	1995	52.5 MMBtu/Hr
5	F32S	Boiler 1	BLR-115-1-210	Johnston	PFTI-750-4G-125W	2000	31.5 MMBtu/Hr
6	F32S	Boiler 2	BLR-115-2-210	Johnston	PFTI-750-4G-125W	2000	31.5 MMBtu/Hr
7	F32S	Boiler 3	BLR-115-3-210	Johnston	PFTI-750-4G-125W	2000	31.5 MMBtu/Hr
8	F32S	Boiler 4	BLR-115-4-210	Johnston	PFTI-750-4G-125W	2000	31.5 MMBtu/Hr
9	F32S	Boiler 5	BLR-115-5-210	Johnston	PFTX-1000-3-125W	2012	42 MMBtu/Hr
10	F32S	Boiler 6	BLR-115-6-210	TBD	TBD	Future Install	33.5 MMBtu/Hr
11	F32S	Boiler 7	BLR-115-7-210	TBD	TBD	Future Install	33.5 MMBtu/Hr
12	F32	Boiler 2	BLR-115-31-210	Johnston	PFTX-750-4-125HW	2006	10.5 MMBtu/Hr
13	F42	Boiler 1	BLR-115-1-10	Cleaver Brooks	CBLE-700-800-125HW	2012	14.3 MMBtu/Hr
14	F42	Boiler 2	BLR-115-2-10	Cleaver Brooks	CBLE-700-800-125HW	2012	29.39 MMBtu/Hr
15	F42	Boiler 3	BLR-115-3-10	Cleaver Brooks	CBLE-700-800-125HW	2012	29.39 MMBtu/Hr
16	F42	Boiler 4	BLR-115-4-10	Cleaver Brooks	CBLE-700-350-125HW	2012	29.39 MMBtu/Hr
17	ASU	Vaporizer Natural Gas-Fired Heater 1	TBD	TBD	TBD	Future Install	59 MMBtu/Hr
18	ASU	Vaporizer Natural Gas-Fired Heater 2	TBD	TBD	TBD	Future Install	59 MMBtu/Hr
19	F52/F62	Boiler 1	TBD	TBD	TBD	TBD	29.39 MMBtu/Hr
20	F52/F62	Boiler 2	TBD	TBD	TBD	TBD	29.39 MMBtu/Hr
21	F52/F62	Boiler 3	TBD	TBD	TBD	TBD	29.39 MMBtu/Hr
22	F52/F62	Boiler 4	TBD	TBD	TBD	TBD	29.39 MMBtu/Hr
23	F52/F62	Boiler 5	TBD	TBD	TBD	TBD	29.39 MMBtu/Hr
24	F52/F62	Boiler 6	TBD	TBD	TBD	TBD	29.39 MMBtu/Hr
25	F52/F62	Boiler 7	TBD	TBD	TBD	TBD	29.39 MMBtu/Hr
26	F52/F62	Boiler 8	TBD	TBD	TBD	TBD	14.29 MMBtu/Hr
THERMAL OXIDIZERS							
27	F12	RCTO 1	VOC-16-FK2-01	Munters	IZS-DS2900-TH	2004	25,000 CFM
28	F12	RCTO 2	VOC-16-FK2-02	Munters	IZS-DS2900-TH	2004	25,000 CFM
29	F12	RCTO 3	VOC-16-FM2-01	Munters	IZS-DS2900-TH	2004	25,000 CFM
30	F12	RCTO 4	VOC-16-FM2-02	Munters	IZS-DS2946-TH	2012	25,000 CFM
31	F12	RCTO 5	TBD	Munters	TBD	Future Install	44,000 CFM

Equipment List							
Intel Corporation - Ocotillo Campus							
Facility ID F000701 Permit Number - P0006742							
S. No	**Fab**	**Name**	**Identification**	**Make**	**Model**	**Mfd Date**	**Capacity**
32	F12	LCE RCTO 1	OCF1C-VOC-138-1-20	Munters	IZS-DS3546-TH	2012	44,000 CFM
33	F12	LCE RCTO 2	OCF1C-VOC-138-2-20	Munters	IZS-DS3546-TH	2012	44,000 CFM
34	F12	LCE RCTO 3	OCF1C-VOC-138-3-00	Anguil	CW900/TO75	2020	90,000 CFM
35	F12	LCE RCTO 4	OCF1C-VOC-138-4-00	Anguil	CW900/TO75	2020	90,000 CFM
36	F32S	RCTO 3	VOC-138-3-120	Munters	IZS-DS2946-TH	2011	25,000 CFM
37	F32S	RCTO 4	VOC-138-4-120	Munters	IZS-DS2946-TH	2015	25,000 CFM
38	F32S	RCTO 5	VOC-138-5-120	Munters	IZS-DS2946-TH	2016	25,000 CFM
39	F32S	RCTO 6	VOC-138-06-120	Munters	IZS-DS2946-TH-AZ	2019	25,000 CFM
40	F32S	RCTO 7	TBD	Munters	TBD	Future Install	25,000 CFM
41	F32	RCTO 1	VOC-138-01-120	Munters	IZS-DS2900-TH	2006	25,000 CFM
42	F32	RCTO 2	VOC-138-02-120	Munters	IZS-DS2900-TH	2006	25,000 CFM
43	F32	RCTO 3	VOC-138-03-120	Munters	IZS-DS2900-TH	2006	25,000 CFM
44	F32	RCTO 4	OCF3B-VOC138-1-20	Munters	IZS-DS3546-TH	2020	44,000 CFM
45	F32	RCTO 5	OCF3B-VOC138-2-20	Munters	IZS-DS3546-TH	2020	44,000 CFM
46	F32	RCTO 6	OCF3B-VOC138-3-20	Munters	IZS-DS3546-TH	2013	44,000 CFM
233	F32	RCTO 4B	OCF3B-VOC138-4-20	Anguil	CW1200/TO75	TBD	120,000 CFM
234	F32	RCTO 5B	OCF3B-VOC138-5-20	Anguil	CW1200/TO75	TBD	120,000 CFM
47	F42	RCTO 1	FB1A-VOC138-1-00	Anguil	CW1200/TO75	2019	120,000 CFM
48	F42	RCTO 2	FB1A-VOC138-2-00	Anguil	CW1200/TO75	2019	120,000 CFM
49	F42	RCTO 3	FB1A-VOC138-3-00	Anguil	CW1200/TO75	2019	120,000 CFM
50	F42	RCTO 4	FB1A-VOC138-4-00	Anguil	CW1200/TO75	2020	120,000 CFM
51	F42	RCTO 5	OCFB1A-VOC-138-5-00	Anguil	CW1200/TO75	2020	120,000 CFM
52	F42	RCTO 6	TBD	TBD	TBD	Future Install	120,000 CFM
55	F52	RCTO 1	TBD	TBD	TBD	TBD	120,000 CFM
56	F52	RCTO 2	TBD	TBD	TBD	TBD	120,000 CFM
57	F52	RCTO 3	TBD	TBD	TBD	TBD	120,000 CFM
58	F52	RCTO 4	TBD	TBD	TBD	TBD	120,000 CFM
59	F62	RCTO 1	TBD	TBD	TBD	TBD	120,000 CFM
60	F62	RCTO 2	TBD	TBD	TBD	TBD	120,000 CFM
61	F62	RCTO 3	TBD	TBD	TBD	TBD	120,000 CFM
62	F62	RCTO 4	TBD	TBD	TBD	TBD	120,000 CFM
WET ACID SCRUBBERS							
63	F12	Scrubber 1	SC-12-FB1-1	Harrington	ECV 10.5 9-5 LB	1995	55,000 CFM
64	F12	Scrubber 2	SC-12-FB1-2	Harrington	ECV 10.5 9-5 LB	1995	55,000 CFM
65	F12	Scrubber 3	SC-12-FB1-3	Harrington	ECV 10.5 9-5 LB	1995	55,000 CFM
66	F12	Scrubber 4	SC-12-FB1-4	Harrington	ECV 10.5 9-5 LB	1995	55,000 CFM
67	F12	Scrubber 5	SC-12-FB1-5	Harrington	ECV 10.5 9-5 LB	1995	55,000 CFM
68	F12	Scrubber 6	SC-12-FB1-6	Harrington	ECV 10.5 9-5 LB	1995	55,000 CFM
69	F12	Scrubber 7	SC-12-FB1-7	Harrington	ECV 10.5 9-5 LB	1995	55,000 CFM
70	F12	LCE Scrubber 1	SC-12-GS1-1	Celicote APC, Inc.	SPT-108 X 108-60	1998	38,000 CFM
71	F12	LCE Scrubber 2	SC-12-GS1-2	Celicote APC, Inc.	SPT-108 X 108-60	1998	38,000 CFM
72	F12	LCE Scrubber 3	SC-12-GS1-3	Beverly Pacific	PSV-2440	2017	38,000 CFM

Equipment List Intel Corporation - Ocotillo Campus Facility ID F000701 Permit Number - P0006742							
S. No	**Fab**	**Name**	**Identification**	**Make**	**Model**	**Mfd Date**	**Capacity**
73	F12	North Support Scrubber 1	SC-12-FK1-1	Harrington	ECV 8 9-8 LB	1997	34,000 CFM
74	F12	North Support Scrubber 2	SC-12-FK1-2	Harrington	ECV 8 9-8 LB	1997	34,000 CFM
75	F32S	Scrubber 1	SC133-1-100	Beverly Pacific	PSV-3860-5	2000	50,000 CFM
76	F32S	Scrubber 2	SC133-2-100	Beverly Pacific	PSV-3860-5	2000	50,000 CFM
77	F32S	Scrubber 3	SC133-3-100	Beverly Pacific	PSV-3860-5	2000	50,000 CFM
78	F32S	Scrubber 4	SC133-4-100	Beverly Pacific	PSV-3860-5	2011	50,000 CFM
79	F32S	Bridge Scrubber 1	SC133-1-400	Beverly Pacific	MPSV-3860-6.5	2000	60,000 CFM
80	F32S	Bridge Scrubber 2	SC133-2-400	Beverly Pacific	MPSH-3860-6.5	2000	60,000 CFM
81	F32	Scrubber 1	SC-133-1-100	Celicote APC, Inc.	SPTR-126X126-63	2006	55,000 CFM
82	F32	Scrubber 2	SC-133-2-100	Celicote APC, Inc.	SPTR-126X126-63	2006	55,000 CFM
83	F32	Scrubber 3	SC-133-3-100	Celicote APC, Inc.	SPTR-126X126-63	2006	55,000 CFM
84	F32	Scrubber 4	SC-133-4-100	Celicote APC, Inc.	SPTR-126X126-63	2006	55,000 CFM
85	F32	Scrubber 5	SC-133-5-100	Celicote APC, Inc.	SPTR-126X126-63	2006	55,000 CFM
86	F42	Scrubber 1	FB1A-SC-133-2-00	HEE Environmental	ECV 13.75 13.75-5 QB	2012	95,000 CFM
87	F42	Scrubber 2	FB1A-SC-133-3-00	HEE Environmental	ECV 13.75 13.75-5 QB	2012	95,000 CFM
88	F42	Scrubber 3	FB1A-SC-133-4-00	HEE Environmental	ECV 13.75 13.75-5 QB	2012	95,000 CFM
89	F42	Scrubber 4	FB1A-SC-133-5-00	HEE Environmental	ECV 13.75 13.75-5 QB	2012	95,000 CFM
90	F52	Scrubber 1	TBD	TBD	TBD	TBD	95,000 CFM
91	F52	Scrubber 2	TBD	TBD	TBD	TBD	95,000 CFM
92	F52	Scrubber 3	TBD	TBD	TBD	TBD	95,000 CFM
93	F52	Scrubber 4	TBD	TBD	TBD	TBD	95,000 CFM
94	F62	Scrubber 1	TBD	TBD	TBD	TBD	95,000 CFM
95	F62	Scrubber 2	TBD	TBD	TBD	TBD	95,000 CFM
96	F62	Scrubber 3	TBD	TBD	TBD	TBD	95,000 CFM
97	F62	Scrubber 4	TBD	TBD	TBD	TBD	95,000 CFM
BSSW							
98	F32S	BSSW Thermal Oxidizer	OX296-1-24A	Catalytic Products	Quadrant SR-300	2011	300 CFM
TRIMIX SYSTEMS							
99	F32S/32	Trimix A Catalytic Oxidizer	PWB2-OX293-0-70	Catalytic Products	Vector SR 6.5	2011	7,500 CFM
100	F32S/32	Trimix B Catalytic Oxidizer	PWB2B-OX293-0-70	Catalytic Products	Vector SR 6.5	2013	7,500 CFM
101	F42	Trimix 1 Catalytic Oxidizer	PB1A-NGB293-0-70	Catalytic Products	Vector SR 6.5	2012	7,500 CFM
102	F52	Trimix 2 Catalytic Oxidizer	TBD	TBD	TBD	TBD	TBD
103	F62	Trimix 3 Catalytic Oxidizer	TBD	TBD	TBD	TBD	TBD
EMERGENCY GENERATORS & FIRE PUMPS							
104	F12	Emergency Generator 1	F12-03-EGEN-1	Caterpillar	3516D1TA	1994	2,518 HP

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S. No	**Fab**	**Name**	**Identification**	**Make**	**Model**	**Mfd Date**	**Capacity**
105	F12	Emergency Generator 2	F12-03-EGEN-2	Caterpillar	3516D1TA	1994	2,518 HP
106	F12	Emergency Generator 3	F12-03-EGEN-3	Caterpillar	3516D1TA	1994	2,518 HP
107	F12	Emergency Generator 4	F12-03-EGEN-4	Caterpillar	3516D1TA	1994	2,518 HP
108	F12	Emergency Generator 5	F12-03-EGEN-5	Caterpillar	3516D1TA	2004	2,525 HP
236	F12	Emergency Generator 6	TBD	Caterpillar	3512C	TBD	2,584 HP
109	F12	F12/32S Link Emergency Generator 1	F12-ASH1-EGEN604-1A-01	Caterpillar	3412C D1TA	2005	896 HP
110	F12	Litho Chiller Pad Emergency Generator 2	F12-03-LSCGEN-1	Caterpillar	3516C-HD	2016	3,634 HP
111	F12	Litho Chiller Pad Emergency Generator 3	F12-03-LSCGEN-2	Caterpillar	3516C-HD	2016	3,634 HP
112	F12	Litho Chiller Pad Emergency Generator 4	F12-03-LSCGEN-3	Caterpillar	3516C-HD	2016	3,634 HP
113	F32S	CPS Emergency Generator 1	F22-10-CPS-GEN-1	Caterpillar	3512D1TA	2000	1,818 HP
114	F32S	CPS Emergency Generator 2	F22-10-CPS-GEN-2	Caterpillar	3512D1TA	2000	1,818 HP
115	F32S	CPS Emergency Generator 3	F22-10-CPS-GEN-3	Caterpillar	3512D1TA	2000	1,818 HP
116	F32S	CPS Emergency Generator 4	F22-10-CPS-GEN-4	Caterpillar	3512D1TA	2000	1,818 HP
117	F32S	Emergency Generator 1	F22-10-EGEN-1	Cummins	1750 DQKB	2000	2,922 HP
118	F32S	Emergency Generator 2	F22-10-EGEN-2	Cummins	1750 DQKB	2000	2,922 HP
119	F32S	Emergency Generator 3	F22-10-EGEN-3	Cummins	1750 DQKB	2000	2,922 HP
120	F32S	Emergency Generator 4	F22-10-EGEN-4	Cummins	1750 DQKB	2000	2,922 HP
121	F32	Litho Emergency Generator 1	F32-09-LCSGEN-1	Caterpillar	3516C D1TA	2007	2,937 HP
122	F32	Litho Emergency Generator 2	F32-09-LCSGEN-2	Caterpillar	3516C D1TA	2007	2,937 HP
123	F32S	Litho Emergency Generator 3	F22-EC2-LCSGEN-3	MTU Onsite Energy	2000-XC6DT2	2010	3,058 HP
124	F32S	Litho Emergency Generator 4	F22-EC2-LCSGEN-4	MTU Onsite Energy	2000-XC6DT2	2010	3,058 HP
125	F32	Emergency Generator 1	F32-13-EGEN-1	Cummins	2000 DQKC	2006	2,922 HP
126	F32	Emergency Generator 2	F32-13-EGEN-2	Cummins	2000 DQKC	2006	2,922 HP
127	F32	Emergency Generator 3	F32-13-EGEN-3	Cummins	2000 DQKC	2006	2,922 HP
128	F32	Emergency Generator 4	F32-13-EGEN-4	Cummins	2000DQKAB	2008	2,922 HP

Equipment List Intel Corporation - Ocotillo Campus Facility ID F000701 Permit Number - P0006742							
S. No	**Fab**	**Name**	**Identification**	**Make**	**Model**	**Mfd Date**	**Capacity**
129	F32	OC30 Emergency Generator 1	F22-30-GEN-1	Cummins	C15D6D	2022	237 HP
130	F12	Fire Pump 1	F12-FPHS-GEN-01	Caterpillar	3306BT	1994	275 HP
131	F12	Fire Pump 2	F12-FPHS-GEN-02	Caterpillar	3306BT	1994	275 HP
132	F42	Emergency Generator 1A	F42-17-EGEN-1A	Cummins	2500 DQLE	2011	3,680 HP
133	F42	Emergency Generator 1B	F42-17-EGEN-2A	Cummins	2500 DQLE	2011	3,680 HP
134	F42	Emergency Generator 2A	F42-17-EGEN-1B	Cummins	2500 DQLE	2011	3,680 HP
135	F42	Emergency Generator 2B	F42-17-EGEN-2B	Cummins	2500 DQLE	2011	3,680 HP
136	F42	Emergency Generator 3A	F42-GEN-3A	Cummins	2500 DQLE	2011	3,680 HP
137	F42	Emergency Generator 3B	F42-GEN-3B	Cummins	2500 DQLE	2011	3,680 HP
138	F42	Emergency Generator 1C	F42-GEN-1C	Cummins	2500 DQLE	2012	3,680 HP
139	F42	Emergency Generator 2C	F42-GEN-2C	Cummins	2500 DQLE	2012	3,680 HP
140	F42	Emergency Generator 3C	F42-GEN-3C	Cummins	2500 DQLE	2012	3,680 HP
141	F42	Emergency Generator 4A	F42-17-EGEN-4A	Cummins	2500 DQLE	2018	3,680 HP
142	F42	Emergency Generator 4B	F42-17-EGEN-4B	Cummins	2500 DQLE	2018	3,680 HP
143	F42	Emergency Generator 4C	F42-17-EGEN-4C	Cummins	2500 DQLE	2019	3,680 HP
144	F42	BRW Emergency Generator	F42-BRW-GEN1	Caterpillar	C15 D1TA	2012	546 HP
145	F42	IWW Emergency Generator 1	OW1-XWTG1X23A	Cummins	C3000 D6e	2019	4,307 HP
146	F42	IWW Emergency Generator 2	TBD	Cummins	C3000 D6e	Future Install	4,307 HP
147	F12	CAP Water Emergency Generator	F12-CAPX72AGENOCCA	Cummins	600 DQCA	2017	1,220 HP
148	ASU	ASU Emergency Generator 1	TBD	TBD	TBD	Future Install	1,743 HP
149	F52/F62	Emergency Generator 1	TBD	Cummins	2750DQLH	TBD	4,060 HP
150	F52/F62	Emergency Generator 2	TBD	Cummins	2750DQLH	TBD	4,060 HP
151	F52/F62	Emergency Generator 3	TBD	Cummins	2750DQLH	TBD	4,060 HP
152	F52/F62	Emergency Generator 4	TBD	Cummins	2750DQLH	TBD	4,060 HP
153	F52/F62	Emergency Generator 5	TBD	Cummins	2750DQLH	TBD	4,060 HP
154	F52/F62	Emergency Generator 6	TBD	Cummins	2750DQLH	TBD	4,060 HP
155	F52/F62	Emergency Generator 7	TBD	Cummins	2750DQLH	TBD	4,060 HP

Equipment List Intel Corporation - Ocotillo Campus Facility ID F000701 Permit Number - P0006742							
S. No	**Fab**	**Name**	**Identification**	**Make**	**Model**	**Mfd Date**	**Capacity**
156	F52/F62	Emergency Generator 8	TBD	Cummins	2750DQLH	TBD	4,060 HP
157	F52/F62	Emergency Generator 9	TBD	Cummins	2750DQLH	TBD	4,060 HP
158	F52/F62	Emergency Generator 10	TBD	Cummins	2750DQLH	TBD	4,060 HP
159	F52/F62	Emergency Generator 11	TBD	Cummins	2750DQLH	TBD	4,060 HP
160	F52/F62	Emergency Generator 12	TBD	Cummins	2750DQLH	TBD	4,060 HP
161	F52/F62	Emergency Generator 13	TBD	Cummins	2750DQLH	TBD	4,060 HP
162	F52/F62	Emergency Generator 14	TBD	Cummins	2750DQLH	TBD	4,060 HP
163	F52/F62	Emergency Generator 15	TBD	Cummins	2750DQLH	TBD	4,060 HP
164	F52/F62	Emergency Generator 16	TBD	Cummins	2750DQLH	TBD	4,060 HP
165	F52/F62	Emergency Generator 17	TBD	Cummins	2750DQLH	TBD	4,060 HP
166	F52/F62	Emergency Generator 18	TBD	Cummins	2750DQLH	TBD	4,060 HP
167	F52/F62	Emergency Generator 19	TBD	Cummins	2750DQLH	TBD	4,060 HP
168	F52/F62	Emergency Generator 20	TBD	Cummins	2750DQLH	TBD	4,060 HP
169	F52/F62	Emergency Generator 21	TBD	Cummins	2750DQLH	TBD	4,060 HP
170	F52/F62	Emergency Generator 22	TBD	Cummins	2750DQLH	TBD	4,060 HP
171	F52/F62	Emergency Generator 23	TBD	Cummins	2750DQLH	TBD	4,060 HP
172	F52/F62	Emergency Generator 24	TBD	Cummins	2750DQLH	TBD	4,060 HP
230	F42	FSB Emergency Generator 1	F42-17-EGEN-5A	Cummins	2500 DQLE	2022	3,705 HP
231	F42	FSB Emergency Generator 2	F42-17-EGEN-5B	Cummins	2500 DQLE	2022	3,705 HP
232	F42	FSB Emergency Generator 3	F42-17-EGEN-5C	Cummins	2500 DQLE	2022	3,705 HP
235	Datacenter	Datacenter Emergency Generator 1	TBD	Cummins Power	2000 DQKAE	TBD	2,922 HP
COOLING TOWERS							
173	F12	Cooling Towers	F12-CT-29-GG5-(001 to 010)	SPX/Marley	UL-3030-125-19P6	1995	7,230 GPM
174	F32S	Cooling Towers	F22-OCC2-CT-114-(1 to 7)-210	SPX/Marley	UL-3030-125-19P6	2000	7,680 GPM
175	F32	Cooling Towers	F32-CT-114-(31 to 36)-210	SPX/Marley	UL-3030-125-19P6	2006	7,680GPM
176	F32S	Packaged Cooling Towers	F22-OCC2-CT-114-(8 to 9)-210	Evapco	AXS 12-22P22	Future Install	2,882 GPM
177	F32	F32-OC30 Packaged Cooling Towers	TBD (5 towers)	Baltimore Aircoil Company	S3E-1424-14W-5/AEY	Future Install	3,984 GPM
178	F42	Cooling Towers	F42-BC1A-CT114-(1 to 14)-10	SPX	UL-3036-125-19P6	2012	8,000 GPM
179	ASU	ASU Cooling Towers	TBD (11 towers)	TBD	TBD	Future Install	7,693 GPM

Equipment List							
Intel Corporation - Ocotillo Campus							
Facility ID F000701 Permit Number - P0006742							
S. No	**Fab**	**Name**	**Identification**	**Make**	**Model**	**Mfd Date**	**Capacity**
180	F52/F62	Cooling Towers	TBD (48 towers)	TBD	TBD	TBD	5,000 GPM
STORAGE SILOS							
181	F12	HFW Lime Silo	F12-TK266-1-40	Imperial Industries	60-40 14-0-X 35-10	2011	3,100 Cu. Ft. 62.02 tons
182	F32S	HFW Lime Silo	OC9-TK266-1-40	Imperial Industries	60-40 14-0-X 35-10	2006	3,100 Cu. Ft. 62.02 tons
183	F32	HFW Lime Silo	PWB2-TK266-1-40	Imperial Industries	60-40 14-0-X 35-10	2010	3,100 Cu. Ft. 62.02 tons
184	F42	HFW Lime Silo	F42-PB1A-TK266-1-40	Imperial Industries	60-40 X 14-0 X 35-10	2011	3,100 Cu. Ft. 62.02 tons
185	F42	HFW Lime Silo	F42-PB1B-TK266-1-40	Imperial Industries	60-40 X 14-0 X 35-10	2014	3,100 Cu. Ft. 62.02 tons
186	Fab 52	HFW Lime Silo	F42-PB1C-TK266-1-40	Imperial Industries	60-40 X 14-0 X 35-10	2022	3,100 Cu. Ft. 62.02 tons
187	Fab 62	HFW Lime Silo	F42-PB1D-TK266-1-40	TBD	TBD	TBD	3,100 Cu. Ft. 62.02 tons
IWW ODOR CONTROL SCRUBBERS							
189	F42	IWW Odor Control Scrubber 1	OW1-GAC-909-2-21	PureAir Filtration	VTS-50000	2019	34,500 CFM
190	F42	IWW Odor Control Scrubber 2	OW1-GAC-909-1-21	PureAir Filtration	VTS-50000	2019	34,500 CFM
191	F42	IWW Odor Control Scrubber 3	OW1-GAC-909-3-21	PureAir Filtration	VTS-50000	2019	34,500 CFM
192	F42	IWW Odor Control Scrubber 4	TBD	TBD	TBD	TBD	TBD
193	F42	IWW Odor Control Scrubber 5	TBD	TBD	TBD	TBD	TBD
194	F42	IWW Odor Control Scrubber 6	TBD	TBD	TBD	TBD	TBD
195	F42	IWW Odor Control Scrubber 7	TBD	TBD	TBD	TBD	TBD
196	F42	IWW Odor Control Scrubber 8	TBD	TBD	TBD	TBD	TBD
197	F42	IWW Odor Control Scrubber 9	TBD	TBD	TBD	TBD	TBD
198	F42	IWW Odor Control Scrubber 10	TBD	TBD	TBD	TBD	TBD
199	F42	IWW Odor Control Scrubber 11	TBD	TBD	TBD	TBD	TBD
200	F42	IWW Odor Control Scrubber 12	TBD	TBD	TBD	TBD	TBD
AMMONIA SCRUBBERS							
201	F12	Ammonia Scrubber 1	SC-15-FD2-1	Harrington	ECV 5 6-5	2004	15,000 CFM
202	F12	Ammonia Scrubber 2	SC-15-FD2-2	Harrington	ECV 5 6-5	2005	15,000 CFM

Equipment List							
Intel Corporation - Ocotillo Campus							
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S. No	**Fab**	**Name**	**Identification**	**Make**	**Model**	**Mfd Date**	**Capacity**
203	F12	Ammonia Scrubber 3	SC-15-FB1-1	Harrington	ECV 5 6-5	2006	15,000 CFM
204	F12	Ammonia Scrubber 4	TBD	HEE-Dual CECO Environmental	ECV 99-5 QB	Future Install	TBD
205	F32S	Ammonia Scrubber 1	OCF2-SC142-1-01	Beverly Pacific	PSV 2440-5	2010	25,000 CFM
206	F32S	Ammonia Scrubber 2	OCF2-SC142-2-01	Beverly Pacific	PSV 2440-5	2010	25,000 CFM
207	F32S	Ammonia Scrubber 3	OCF2-SC142-3-01	Beverly Pacific	PSV 2440-5	2010	25,000 CFM
208	F32S	Ammonia Scrubber 4	TBD	HEE-Dual CECO Environmental	ECV 99-5 QB	Future Install	TBD
209	F32S	Bridge Ammonia Scrubber 1	OCB2-SC142-21-00	Beverly Pacific	691-SUB	2011	25,000 CFM
210	F32S	Bridge Ammonia Scrubber 2	OCB2-SC142-22-00	Beverly Pacific	691-SUB	2011	25,000 CFM
211	F32	Ammonia Scrubber 1	OCF3-SC-142-1-100	Ceilcote Air Pollution Control	SPTR-90x90-93	2006	25,000 CFM
212	F32	Ammonia Scrubber 2	OCF3-SC-142-2-100	Ceilcote Air Pollution Control	SPTR-90x90-93	2006	25,000 CFM
213	F32	Ammonia Scrubber 3	OCF3-SC-142-3-100	HEE Environmental Engineering	ECV 7.5 7.5 8-5QB	2009	25,000 CFM
214	F32	Ammonia Scrubber 4	OCF3-SC-142-4-100	HEE Environmental Engineering	ECV 7.5 7.5 8-5QB	2011	25,000 CFM
215	F32	Ammonia Scrubber 5	OCF3-SC-142-5-100	HEE Environmental Engineering	ECV 7.5 7.5 8-5QB	2013	25,000 CFM
216	F32	Ammonia Scrubber 6	OCF3B-SC-142-1-00	HEE-Dual CECO Environmental	ECV 99-5 QB	2017	40,000/2400 CFM
217	F32	Ammonia Scrubber 7	OCF3B-SC-142-2-00	HEE-Dual CECO Environmental	ECV 99-5 QB	2017	40,000/2400 CFM
218	F32	Ammonia Scrubber 8	OCF3B-SC-142-3-00	HEE-Dual CECO Environmental	ECV 99-5 QB	2017	40,000/2400 CFM
219	F42	Ammonia Scrubber 1	OCFB1A-SC142-1-00	HEE (Harrington)	ECV 9 9-5LB	2011	40,000 CFM
220	F42	Ammonia Scrubber 2	OCFB1A-SC142-2-00	HEE (Harrington)	ECV 9 9-5LB	2011	40,000 CFM
221	F42	Ammonia Scrubber 3	OCFB1A-SC142-3-00	HEE (Harrington)	ECV 9 9-5LB	2011	40,000 CFM
222	F42	Ammonia Scrubber 4	OCFB1A-SC142-4-00	HEE Environmental	ECV 13.75 13.75-5 QB	2012	95000 CFM
223	F42	Ammonia Scrubber 5	TBD	HEE-Dual CECO Environmental	ECV 99-5 QB	Future Install	TBD
224	Fab 52	Ammonia Scrubber 1	TBD	TBD	TBD	TBD	95,000 CFM
225	Fab 52	Ammonia Scrubber 2	TBD	TBD	TBD	TBD	95,000 CFM
226	Fab 52	Ammonia Scrubber 3	TBD	TBD	TBD	TBD	95,000 CFM
227	Fab 62	Ammonia Scrubber 1	TBD	TBD	TBD	TBD	95,000 CFM
228	Fab 62	Ammonia Scrubber 2	TBD	TBD	TBD	TBD	95,000 CFM
229	Fab 62	Ammonia Scrubber 3	TBD	TBD	TBD	TBD	95,000 CFM

APPENDIX B: EMISSIONS CALCULATIONS PROCEDURES

The Permittee shall use the following calculation procedures and recordkeeping to determine each emissions unit's monthly and 12-month rolling total emissions as required by 40 CFR § 51.165(f)(13)(i) and 40 CFR § 52.21(aa)(13)(i) for each PAL pollutant listed in Permit Condition 2.a and 2.b.

A. ***Emergency Engines and Fire Pumps:*** **NO_X, CO, PM, PM_{10}, $PM_{2.5}$, VOC, and SO_2 Emissions**

i. Parameter. Hours of operation per month for each engine.

ii. Parameter Monitoring. The Permittee shall monitor hours of operation for each engine via run-time meters installed on each engine.

iii. Recordkeeping. The Permittee shall maintain the following monitoring documentation for each engine for five years from the date of each record:

- Run time log of hours of operation
- Monthly emission calculations for each PAL pollutant

iv. Monthly Calculations. The Permittee shall calculate monthly emissions from each of the emergency generator engines and fire pump engines for each PAL pollutant as follows:

$$E_k(i,j) = \text{Hours of Operation}(i,j) * EF(j,k) * \frac{1}{2000}$$

Where:
i = month during rolling 12-month period (i.e., January, February)
j = emergency generator engine or fire pump engine (i.e, 3516 D1TA / #11147-01 [gen 1])
k = PAL pollutant (i.e., NO_X, CO, etc.)
E_k (i, j) = emissions of PAL pollutant for engine or fire pump during the month (tons)
Hours of operation (i,j) = hours of operation for generator or fire pump engine (hours)
EF (j, k) = PAL pollutant emission factor for engine or fire pumps (lb/ hr)
1/2000 = conversion from pounds to tons (tons/pound)

Monthly emission values shall be calculated for each engine and summed together to obtain the total PAL pollutant emissions from engines as follows:

$$E_k(i) = \sum E_k(i,j)$$

Where:
E_k (i) = total emissions of each PAL pollutant from ***all*** engines during month (tons)
i = month during rolling 12-month period (i.e., January, February)
j = emergency generator engine or fire pump engine (i.e, 3516 D1TA / #11147-01 [gen 1])
k = PAL pollutant (i.e., NO_X, CO, etc.)
E_k (i, j) = emissions of PAL pollutant for engine or fire pump during the month (tons)

v. Alternative Method/Data Substitution. In the event of missing or invalid run hour data, fuel levels, PM logs and known activity/emergency events will be utilized to validate engine use during the month and utilize analogous/highest previous run hour for same PM and duration of any recorded emergency event to calculate emissions.

B. ***Boilers & Trimix:*** **PM, PM_{10}, $PM_{2.5}$, SO_2, and VOC Emissions**

i. Parameter. Natural gas usage per month for each boiler and Trimix.

ii. Parameter Monitoring. Natural gas usage shall be monitored via installed natural gas meters at each boiler and Trimix.

iii. Recordkeeping. The Permittee shall maintain the following monitoring documentation pertaining to the boilers and Trimix at the Ocotillo Facility for five years from the date of each record:

- Natural gas usage per month of each boiler and Trimix.
- Monthly emission calculations for each PAL pollutant for each boiler and Trimix.

iv. Monthly Calculations. Monthly emissions from each boiler for each PAL pollutant shall be calculated as follows:

$$E_k\,(i,j) = \text{Natural Gas Usage}\,(i,j) * EF\,(j,k) * \frac{1}{2000}$$

Where:
i = month during rolling 12-month period (i.e., January, February)
j = boiler or Trimix (i.e, F12 Boiler 1, F12 Boiler 2, etc.)
k = PAL pollutant (i.e., VOC, PM, etc.)
E_k (i, j) = emissions of PAL pollutant for boiler or Trimix during the month (tons)
Natural Gas Usage (i,j) = natural gas usage of boiler or Trimix during month (mmscf)
EF (j, k) = PAL pollutant emission factor for boiler or Trimix (lb/ mmscf)
1/2000 = conversion from pounds to tons (tons/pound)

v. Monthly emission values shall be calculated for each boiler and each Trimix. Emissions from like units (i.e. all boilers, all Trimix) are summed together to obtain the total PAL pollutant emissions from each type of unit as follows:

$$E_k\,(i) = \sum E_k\,(i,j)$$

Where:
E_k (i) = total emissions of each PAL pollutant from ***all*** boilers or ***all*** Trimix during month (tons)
i = month during rolling 12-month period (i.e., January, February)
j = boiler or Trimix (i.e, F12 Boiler 1, F12 Boiler 2, etc.)
k = PAL pollutant (i.e., VOC, PM, etc.)
E_k (i, j) = emissions of PAL pollutant for boiler or Trimix during the month (tons)

vi. Alternative Method/Data Substitution. In the event of missing or invalid boiler natural gas usage data the Permittee shall utilize the previous 30-day historical statistical representation of NG usage by the boiler during similar operations as verified by similar firing rate of the boiler.

In the event of missing or invalid natural gas flowmeter data on a Trimix catalytic oxidizer unit, the Permittee shall verify the continued normal operations of the oxidizer via the oxidizer downstream temperature readings for the duration of the missing or invalid natural gas flowmeter data. The Permittee shall utilize the previous 30-day statistical average natural gas flowrate in place of the missing or invalid flowmeter data.

C. ***Boilers & Trimix:*** **NO_X and CO Emissions**

i. Parameter. Operational hours per month for each boiler and Trimix.

ii. Parameter Monitoring. Operational hours shall be monitored via run time points for each unit in SCADA.

iii. Recordkeeping. The Permittee shall maintain the following monitoring documentation pertaining to the boilers and Trimix at the Ocotillo Facility for five years from the date of each record:

- Monthly operational hours for each boiler and Trimix.
- Monthly emission calculations for each PAL pollutant for each boiler and Trimix.

iv. Monthly Calculations. Monthly emissions from each boiler and Trimix for each PAL pollutant shall be calculated as follows:

$$E_k\,(i,j) = \text{Operational Hours}\,(i,j) * EF(j,k) * \frac{1}{2000}$$

Where:
i = month during rolling 12-month period (i.e., January, February)
j = boiler or Trimix (i.e, F12 Boiler 1, F12 Boiler 2, etc.)
k = PAL pollutant (i.e., NO_X, CO)
E_k (i, j) = emissions of PAL pollutant for boiler or Trimix during the month (tons)
Operational Hours (i,j) = operational hours of boiler or Trimix during month (hrs)
EF (j, k) = PAL pollutant emission factor for boiler or Trimix (lb/hr)
1/2000 = conversion from pounds to tons (tons/pound)

v. Monthly emission values shall be calculated for each boiler and each Trimix. Emissions from like units (i.e. all boiler, all Trimix) are summed together to obtain the total PAL pollutant emissions from each type of unit as follows:

$$E_k\,(i) = \sum E_k\,(i,j)$$

Where:
E_k (i) = total emissions of each PAL pollutant from ***all*** boilers or ***all*** Trimix during month (tons)
i = month during rolling 12-month period (i.e., January, February)
j = boiler or Trimix (i.e, F12 Boiler 1, F12 Boiler 2, etc.)
k = PAL pollutant (i.e., NO_X, CO)
E_k (i, j) = emissions of PAL pollutant for boiler or Trimix during the month (tons)

vi. Alternative Method/Data Substitution. In the event of missing or invalid run time data in SCADA the Permittee shall utilize total number of hours in the month and assume the unit ran for the entire month.

D. ***General Fab Natural Gas Combustion Emissions:*** **NO_X, CO, PM, PM_{10}, $PM_{2.5}$, SO_2, and VOC Emissions**

i. Parameter. General fab natural gas usage. General fab natural gas usage is equal to site natural gas usage, less natural gas usage by permitted equipment referenced within this Appendix, and natural gas used by fab tools which exhaust to permitted equipment that is performance tested in accordance with permit requirements (subfab natural gas usage).

ii. Parameter Monitoring. Natural gas usage shall be monitored via installed natural gas meters for the site, on permitted equipment as outlined within this appendix, and natural gas meters on the lines that supply fab tools which exhaust to permitted equipment that is performance tested in accordance with permit requirements.

iii. Recordkeeping. The Permittee shall maintain the following monitoring documentation pertaining to the General Fab at the Ocotillo Facility for five years from the date of each record:

- General Fab natural gas usage per month
- Monthly emission calculations for each PAL pollutant for the General Fab

iv. Monthly Calculations. Monthly emissions for the General Fab for each PAL pollutant shall be calculated as follows:

$$E_k\,(i) = \text{Natural Gas Usage}\,(i) * EF(k) * \frac{1}{2000}$$

Where:
i = month during rolling 12-month period (i.e., January, February)
k = PAL pollutant (i.e., NO_X, CO, etc.)
E_k (i) = emissions of PAL pollutant for General Fab during the month (tons)
Natural Gas Usage (i) = natural gas usage of General Fab during month (mmscf)

EF (j, k) = PAL pollutant emission factor for General Fab (lb/ mmscf)
1/2000 = conversion from pounds to tons (tons/pound)

Where:

$$Natural\ Gas\ Usage\ (i)\ = \\ Site\ natural\ gas\ usage - (VOC\ abatement\ unit\ natural\ gas\ usage\ + \\ boiler\ natural\ gas\ usage\ + trimix\ natural\ gas\ usage + subfab\ natural\ gas\ usage\ )$$

v. Alternative Method/Data Substitution. In the event of failure and/or malfunction of natural gas meters, Intel will utilize the previous 30-day historical statistical representation of General Fab natural gas usage during similar operations as verified by similar natural gas usage for individual permitted natural gas emission units and subfab natural gas usage.

E. ***Cooling Towers:*** **PM, PM_{10}, and $PM_{2.5}$ Emissions**

i. Emission Factors Determination. Emission factors for each cooling tower bay shall be calculated on a monthly basis using the following formulas:

For PM Emissions:

$$PM\ \left(\frac{lb}{hr}\right) = Flowrate\ (gpm) * \frac{TDS\ (ppm)}{10^6} * \rho_w * \frac{Drift\ Rate}{100} * 60\ \frac{min}{hr}$$

For PM_{10} Emissions:

$$PM_{10}\ \left(\frac{lb}{hr}\right) = Flowrate\ (gpm) * \frac{TDS\ (ppm)}{10^6} * \rho_w * \frac{Drift\ Rate}{100} * 60\ \frac{min}{hr} * PM_{10}\ Fraction$$

For $PM_{2.5}$ Emissions:

$$PM_{2.5}\ \left(\frac{lb}{hr}\right) = Flowrate\ (gpm) * \frac{TDS\ (ppm)}{10^6} * \rho_w * \frac{Drift\ Rate}{100} * 60\ \frac{min}{hr} * PM_{10}\ Fraction \\ * PM_{2.5}\ Fraction$$

Where:
Flowrate (gpm) = maximum flowrate of cooling water in cooling tower bay
TDS (ppm) = total dissolved concentration of cooling water
P_w = density of water
Drift rate = particulate matter drift rate (%)
PM_{10} Fraction = fraction of PM that is equal to PM_{10}

$$PM_{10}Fraction = PM * 0.315$$

$PM_{2.5}$ Fraction = fraction of PM_{10} that is equal to $PM_{2.5}$

$$PM_{2.5}Fraction = PM_{10} * 0.6$$

TDS will be calculated as follows on a monthly basis as:

$$TDS(ppm) = Conductivity * 0.67$$

ii. Parameter. Conductivity of the cooling water and hours of operation of each cooling tower bay.

iii. Parameter Monitoring. Conductivity of each cooling tower bay shall be measured in sump of the cooling tower bays and a monthly average shall be reported. Hours of operation shall be monitored via pump uptime at each cooling tower bay.

iv. Recordkeeping. The Permittee shall maintain the following monitoring documentation pertaining to the cooling towers at the Ocotillo Facility for five years from the date of each record:

- Conductivity of each cooling tower bay for each month.
- Hours of operation for each cooling tower bay for each month.
- Monthly emission calculations of PM, PM_{10} and $PM_{2.5}$ for each cooling tower bay.

v. Monthly Calculations. Monthly emissions for each cooling tower bay shall be calculated as follows:

$$E_k\,(i,j) = \text{Hours of Operation}\,(i,j) * EF(i,j,k) * \frac{1}{2000}$$

Where:
i = month during rolling 12-month period (i.e., January, February)
j = cooling tower bay (i.e, Fab 12 cooling towers, Fab 42 cooling towers, etc.)
k = PAL pollutant (i.e., PM, PM_{10}, etc.)
E_k (i, j) = emissions of PAL pollutant for cooling tower bay during the month (tons)
Hours of Operation (i,j) = hours each cooling tower bay operated during the month
EF (i, j, k) = PAL pollutant emission factor for cooling tower bay (lb/hr)
1/2000 = conversion from pounds to tons (tons/pound)

Monthly emission values shall be calculated for each cooling tower bay and summed together to obtain the total PAL pollutant emissions from cooling towers as follows:

$$E_k\,(i) = \sum E_k\,(i,j)$$

Where:
E_k (i) = total emissions of each PAL pollutant from ***all*** cooling towers during month (tons)
i = month during rolling 12-month period (i.e., January, February)
j = cooling tower bay (i.e, Fab 12 cooling towers, Fab 42 cooling towers, etc.)
k = PAL pollutant (i.e., PM, PM_{10}, etc.)
E_k (i, j) = emissions of PAL pollutant for cooling towers during the month (tons)

vi. Alternative Method/Data Substitution. If monthly conductivity data is missing or monthly pump hours are missing, the Permittee shall utilize the highest monthly conductivity or highest monthly pump hours, respectively, in the previous 12 month period.

F. ***Cooling Towers:*** **VOC Emissions**

i. Parameter. Chemical usage in cooling towers.

ii. Parameter Monitoring. Chemical usage of materials in cooling towers is monitored via monthly chemical purchase data.

iii. Recordkeeping. The Permittee shall maintain the following monitoring documentation pertaining to the chemicals utilized in cooling towers at the Intel Ocotillo Facility for five years from the date of each record:

- Chemical purchase data of chemicals utilized in cooling towers
- Monthly emission calculations of VOCs from cooling towers.

iv. Monthly Calculations. Monthly VOC emissions from cooling towers shall be calculated as follows:

$$E_k\,(i,j) = \text{Chemical Usage}\,(i,j) * \text{VOC Weight Percent} * EF(j,k) * \frac{1}{2000}$$

Where:
i = month during rolling 12-month period (i.e., January, February)
j = evaporative process emission source (i.e, cooling towers)
k = PAL pollutant (i.e., VOC)
E_k (i, j) = emissions of PAL pollutant from cooling towers during the month (tons)

Chemical Usage (i,j) = chemical usage in cooling towers during month (lbs of solvent)
VOC Weight Percent = weight percent of VOCs in chemical
EF (j, k) = PAL pollutant emission factor from chemical (lb/ lb of chemical)
1/2000 = conversion from pounds to tons (tons/pound)

v. Monthly emission values shall be calculated for each VOC and summed together to obtain the total PAL pollutant emissions from cooling towers as follows:

$$E_k\ (i) = \sum E_k\ (i, j)$$

Where:
E_k (i) = total emissions of VOC from ***all*** cooling towers during month (tons)
i = month during rolling 12-month period (i.e., January, February)
j = evaporative process emission source (i.e, cooling towers)
k = PAL pollutant (i.e., VOCs)
E_k (i, j) = emissions of PAL pollutant from cooling towers during the month (tons)

vi. Alternative Method/Data Substitution. If chemical purchase data is missing the Permittee shall use the highest chemical purchase data reported for the applicable chemical for a month in previous 12 month period.

G. ***Storage Silos:*** **PM, PM_{10}, and $PM_{2.5}$ Emissions**

i. Parameter. Loading frequency for each storage silo.

ii. Parameter Monitoring. Loading frequency for storage silos shall be tracked via delivery logs on a monthly basis.

iii. Recordkeeping. The Permittee shall maintain the following monitoring documentation pertaining to the storage silos at the Ocotillo Facility for five years from the date of each record:

- Loading frequency for each storage silo during each month.
- Monthly emission calculations of PM, PM_{10}, and $PM_{2.5}$ for each storage silo.

iv. Monthly Calculations. Monthly emissions for each storage silo shall be calculated as follows:

$$E_k\ (i, j) = \text{Silo Capacity}\ (i, j) * \text{Load Frequency}\ (i, j) * EF(i, j, k) * \#\ \text{of Silos} * \frac{1}{2000}$$

Where:
i = month during rolling 12-month period (i.e., January, February)
j = storage silo (i.e, Fab 12 lime silo, Fab 42 lime silo, etc.)
k = PAL pollutant (i.e., PM, PM_{10}, etc.)
E_k (i, j) = emissions of PAL pollutant for storage silo during the month (tons)
Silo capacity (i,j) = maximum silo capacity (tons/load)
EF (i, j, k) = PAL pollutant emission factor for storage silo (lb/ton)
Load Frequency (i, j) = Number of loads of material being unloaded into each storage silo during month
# of Silos = number of silos at individual Fab
1/2000 = conversion from pounds to tons (tons/pound)

v. Monthly emission values shall be calculated for set of storage silos and summed together to obtain the total PAL pollutant emissions from storage silos as follows:

$$E_k\ (i) = \sum E_k\ (i, j)$$

Where:
E_k (i) = total emissions of each PAL pollutant from ***all*** storage silos during month (tons)
i = month during rolling 12-month period (i.e., January, February)
j = storage silo (i.e, Fab 12 lime silo, Fab 42 lime silo, etc.)
k = PAL pollutant (i.e., PM, PM_{10}, etc.)
E_k (i, j) = emissions of PAL pollutant for storage silo during the month (tons)

vi. Alternative Method/Data Substitution. If loading frequency data is missing for any of the storage silos, the Permittee shall substitute the highest loading frequency in a month for the applicable storage silo in the previous 12 month period.

H. ***Monitoring System for Permitted VOC Abatement Control Devices (Natural Gas Combustion Emissions Only):*** **SO_2 Emissions**

i. Parameter. Natural gas usage per month for each VOC control device.

ii. Parameter Monitoring. Natural gas usage shall be monitored via installed natural gas meters at each VOC control device.

iii. Recordkeeping. The Permittee shall maintain the following monitoring documentation pertaining to the VOC control devices at the Ocotillo Facility for five years from the date of each record:

- Natural gas usage per month of each VOC control device
- Monthly emission calculations of SO_2 for each VOC control device

iv. Monthly Calculations. Monthly emissions from each VOC control device for SO_2 shall be calculated as follows:

$$E_k\ (i, j) = \text{Natural Gas Usage}\ (i, j) * EF(j, k) * \frac{1}{2000}$$

Where:
i = month during rolling 12-month period (i.e., January, February)
j = VOC control device (i.e, F12 RCTO 1, F12 RCTO 2, etc.)
k = PAL pollutant (i.e., SO_2.)
E_k (i, j) = emissions of PAL pollutant for VOC control device during the month (tons)
Natural Gas Usage (i,j) = natural gas usage of VOC control device during month (mmscf)
EF (j, k) = PAL pollutant emission factor for VOC control device (lb/mmscf)
1/2000 = conversion from pounds to tons (tons/pound)

v. Monthly emission values shall be calculated for each VOC control device and summed together to obtain the total PAL pollutant emissions from VOC control devices as follows:

$$E_k\ (i) = \sum E_k\ (i, j)$$

Where:
E_k (i) = total emissions of each PAL pollutant from ***all*** VOC control devices during month (tons)
i = month during rolling 12-month period (i.e., January, February)
j = control device (i.e, F12 RCTO 1, F12 RCTO 2, etc.)
k = PAL pollutant (i.e., SO_2.)
E_k (i, j) = emissions of PAL pollutant for control device during the month (tons)

vi. Alternative Method/Data Substitution. In the event of missing or invalid natural gas flowmeter data on an RCTO VOC abatement unit Intel shall verify the unit operations remained within the specification limits outlined in the Operations and Maintenance document to ensure unit continues to abate VOCs as designed. Intel shall utilize the modulating gas valve actuator (MGVA) position to calculate approximate natural gas usage since position of MGVA and natural gas usage directly correlate to one another.

I. ***Monitoring System for Fab Emission Units (Process and Natural Gas Combustion Emissions Exhausted Through Ammonia Scrubbers):*** **NOx Emissions**

i. Parameter. Production Index (PI) per month for the site which shall be defined as the ratio of the average wafer starts during the month to the average wafer starts during the test period.

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

ii. Parameter Monitoring. Wafer start data, used to determine the production index, shall be monitored via Permittee's production planners for the site.

iii. Recordkeeping. The Permittee shall maintain the following monitoring documentation pertaining to the ammonia scrubbers at the Intel Ocotillo Facility for five years from the date of each record:
- Wafer start data per month for the site
- Monthly emission calculations of NOx from ammonia scrubbers.

iv. Monthly Calculations. Monthly emissions for the site shall be calculated as follows:

$$E_k\ (i) = TR_{Am} * PI(i) * Hours\ of\ Operation\ (i) * \frac{1}{2000}$$

Where:
i = month during rolling 12-month period (i.e., January, February)
k = PAL pollutant (i.e., NOx)
TR_{Am} = Site wide testing result of NOx from the ammonia scrubbers (lb/hr)
PI(i) = Monthly production index defined as the ratio of the average wafer starts during the month to the average wafer starts during the test period
Hours of Operation (i) = hours the Fabs operated during the month
1/2000 = conversion from pounds to tons (tons/pound)

v. Alternative Method/Data Substitution. If wafer start data is not available from the site production planners, the Permittee shall obtain wafer start data from the Finance group.

J. ***Monitoring System for Fab Emission Units (Process and Natural Gas Combustion Emissions Exhausted Through VOC Abatement Units, Wet Acid Scrubbers, and Ammonia Scrubbers):*** **VOC Emissions**

i. Parameter. Production Index (PI) per month for the site which shall be defined as the ratio of the average wafer starts during the month to the average wafer starts during the test period.

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

ii. Parameter Monitoring. Wafer start data, used to determine the production index, shall be monitored via Permittee's production planners for the site.

iii. Recordkeeping. The Permittee shall maintain the following monitoring documentation pertaining to the control devices at the Intel Ocotillo Facility for five years from the date of each record:
- Wafer start data per month for the site
- Monthly emission calculations of VOC from VOC abatement units, wet acid scrubbers, and ammonia scrubbers

iv. Monthly Calculations. Monthly emissions for the site shall be calculated as follows:

$$E_k\ (i) = [TR_{VOC} * PI(i) + TR_{Scr} * PI(i) + TR_{Am} * PI(i)] * Hours\ of\ Operation\ (i) * \frac{1}{2000}$$

Where:
i = month during rolling 12-month period (i.e., January, February)
k = PAL pollutant (i.e., VOC)

TR_{VOC} = Site wide testing result of VOCs from RCTO VOC abatement units (lb/hr)
TR_{Scr} = Site wide testing result of VOCs from the wet acid scrubbers (lb/hr)
TR_{Am} = Site wide testing result of VOCs from the ammonia scrubbers (lb/hr)
PI(i) = Monthly production index defined as the ratio of the average wafer starts during the month to the average wafer starts during the test period
Hours of Operation (i) = hours the Fabs operated during the month
1/2000 = conversion from pounds to tons (tons/pound)

v. Alternative Method/Data Substitution. If wafer start data is not available from the site production planners, the Permittee shall obtain wafer start data from the Finance group.

K. ***Monitoring System for Fab Emission Units (Process Emissions Only Exhausted Through Wet Acid Scrubbers and Process and Natural Gas Combustion Emissions Exhausted Through VOC Abatement Units):*** **CO, NO_X, PM, PM_{10}, and $PM_{2.5}$ Emissions**

i. Parameter. Production Index per month for the site.

ii. Parameter Monitoring. Wafer start data shall be monitored via Intel's production planners for the site.

iii. Recordkeeping. The Permittee shall maintain the following monitoring documentation pertaining to the control devices at the Ocotillo Facility for five years from the date of each record:

- Wafer start data per month for the site
- Monthly emission calculations of CO, NO_x, PM, PM_{10}, and $PM_{2.5}$ from process emissions for the site

iv. Monthly Calculations. Monthly emissions for the site shall be calculated as follows:

$$E_k\ (i) = [TR_k * PI(i)] * \text{Hours of Operation}\ (i) * \frac{1}{2000}$$

Where:
i = month during rolling 12-month period (i.e., January, February)
k = PAL pollutant (i.e., CO, NO_x, etc.)
TR_k = Site wide stack testing result of PAL pollutant (lb/hr)
PI(i) = Monthly production index defined as the ratio of the average wafer starts during the month to the average wafer starts during the test period
Hours of Operation (i) = hours the Fabs operated during the month
1/2000 = conversion from pounds to tons (tons/pound)

v. Alternative Method/Data Substitution. If wafer start data is not available from the site production planners, the Permittee shall obtain wafer start data from the Finance group.

L. ***Monitoring System for Fab Emission Units (Process Emissions Only):*** **SO_2 and Fluoride Emissions (Fluoride emissions do not include HF)**

i. Parameter. Chemical use data for the site and weighting factor for each technology.

ii. Parameter Monitoring. Chemical use data for the site shall be tracked via the chemical data management system. The weighting factor for each technology shall be published at least annually.

iii. Recordkeeping. The Permittee shall maintain the following monitoring documentation pertaining to the control devices at the Intel Ocotillo Facility for five years from the date of each record:

- Chemical use data from monthly chemical use reports
- Weighting factors at least annually

- Monthly emission calculations of SO_2 and Fluorides from process emissions for the site

iv. Monthly Calculations. Monthly emissions for each technology shall be calculated as follows:

$$E_k\,(i,l,m) = P_m * WF_l * EF_{k,l,m} * \frac{1}{2000}$$

Where:
i = month during rolling 12-month period (i.e., January, February)
k = PAL pollutant (i.e., SO_2, Fluoride)
l = technology (i.e., A, B, etc.)
m = process chemical (i.e., Chem 1, Chem 2, etc.)
P_m = chemical use for the month (pound)
$EF_{k,l,m}$ = Emission factor (pound of emissions/pound of chemical)
WF_l = weighting factor (%)
1/2000 = conversion from pounds to tons (tons/pound)

v. Monthly emission values shall be calculated for each technology and summed together to obtain the total PAL pollutant emissions from control devices as follows:

$$E_k\,(i) = \sum E_k\,(i,l,m)$$

vi. Alternative Method/Data Substitution. If the chemical use data is missing the Permittee shall use the highest chemical use data reported for a month in the previous 12 month period.

M. ***Monitoring System for Fab Emission Units (Uncontrolled Evaporative Processes):*** **VOC Emissions (from tanks)**

i. Parameter. Material throughput of each tank.

ii. Parameter Monitoring. Material throughput shall be monitored via the flowrate of the pump for each tank and the hours per month that material is pumped through each tank.

iii. Recordkeeping. The Permittee shall maintain the following monitoring documentation pertaining to the tanks at the Ocotillo Facility for five years from the date of each record:

- Material throughput per month of each tank
- Monthly emission calculations of VOCs for each tank

iv. Monthly Calculations. Monthly calculations for VOCs from tanks shall be calculated using TankESP software which are based on formulas as provided in Chapter 7 of AP-42, *Liquid Storage Tanks*. As such, the Permittee shall input the throughput of VOC containing materials each month in the TankESP software to obtain the monthly VOC emission estimates.

v. Alternative Method/Data Substitution. If material throughput data is missing for any tank, the Permittee shall utilize the previous 30 day historical statistical representation of material throughput for the applicable tank.

N. ***Monitoring System for Fab Emission Units (Uncontrolled Evaporative Processes):*** **VOC Emissions (from wipers, sinks, and bottles)**

i. Parameter. Solvent usage in wipers, sinks, and bottles.

ii. Parameter Monitoring. Solvent usage for wipers, sinks, and bottles shall be monitored via monthly usage logs of sinks and chemical purchase data for wipes and bottles. For the sinks, usage shall be determined by tracking the monthly hours of operation the sinks are on and the flowrate of material through the sinks.

iii. Recordkeeping. The Permittee shall maintain the following monitoring documentation pertaining to the wipers, sinks and bottles at the Intel Ocotillo Facility for five years from the date of each record:

- Solvent usage logs of sinks per month
- Chemical purchase data for wipes and bottles
- Monthly emission calculations of VOCs from wipers, sinks, and bottles

iv. Monthly Calculations. Monthly emissions from each evaporative process emission source of VOCs shall be calculated as follows:

$$E_k\ (i,j) = \text{Solvent Usage}\ (i,j) * \text{VOC Weight Percent} * \text{EF}(j,k) * \frac{1}{2000}$$

Where:
i = month during rolling 12-month period (i.e., January, February)
j = evaporative process emission source (i.e, wipers, sinks, bottles)
k = PAL pollutant (i.e., VOCs)
E_k (i, j) = emissions of PAL pollutant from wipers, sinks and bottles for Fabs during the month (tons)
Solvent Usage (i,j) = solvent usage in wipers, sinks, or bottles during month (lbs of solvent)
VOC Weight Percent = weight percent of VOCs in solvent
EF (j, k) = PAL pollutant emission factor from solvent (lb/ lb of solvent)
1/2000 = conversion from pounds to tons (tons/pound)

v. Monthly emission values shall be calculated for each VOC and summed together to obtain the total PAL pollutant emissions from control devices as follows:

$$E_k\ (i) = \sum E_k\ (i,j)$$

Where:
E_k (i) = total emissions of VOC from ***all*** evaporative process emission source during month (tons)
i = month during rolling 12-month period (i.e., January, February)
j = evaporative process emission source (i.e, wipers, sinks, bottles)
k = PAL pollutant (i.e., VOCs)
E_k (i, j) = emissions of PAL pollutant for each evaporative process emission source during the month (tons)

vi. Alternative Method/Data Substitution. If the solvent use data is missing, the Permittee shall use the highest solvent use data for the applicable sink reported for a month in the previous 12 month period. If the chemical purchase data is missing, the Permittee shall use the highest chemical purchase data reported for the applicable chemical for a month in the previous 12 month period.

O. ***Monitoring System for Fab Emission Units (Uncontrolled Evaporative Processes):*** **VOC Emissions from Chemical Delivery Module (CDM) units.**
Process tools draw from specific CDM units to utilize the chemical during manufacturing steps; emissions occur when the chemical is be pulled by the process tools and when chemical supply totes are replaced in the system.

i. Parameter. Chemical use data for the site and emission factors for each applicable chemical and CDM system.

ii. Parameter Monitoring. Chemical use data for the site shall be tracked via the chemical data management system. The emission factors for each applicable chemical and CDM system will be published every 5 years.

iii. Recordkeeping. The Permittee shall maintain the following monitoring documentation pertaining to the control devices at the Intel Ocotillo Facility for five years from the date of each record:

- Chemical purchase data for each CDM chemical
- Emission factors every 5 years
- Monthly emission calculations of VOCs from CDM units for the site

iv. Monthly Calculations. Monthly emissions for each technology shall be calculated as follows:

$$E_k\ (i, l, m) = P_m * EF_{k,l,m} * \frac{1}{2000}$$

Where:
i = month during rolling 12-month period (i.e., January, February)
k = PAL pollutant (i.e., VOC)
l = CDM system model/generation (i.e., Gen 3, Gen 4, etc.)
m = chemical distributed via CDM systems (i.e., Chem 1, Chem 2, etc.)
P_m = chemical purchase data for the month (pound)
$EF_{k,l,m}$ = Emission factor (pound of emissions/pound of chemical)
1/2000 = conversion from pounds to tons (tons/pound)

v. Monthly emission values shall be calculated for each CDM system using equations in sections N.iv. and/or O.iv., as applicable, and summed together to obtain the total PAL pollutant emissions from systems as follows:

$$E_k\ (i) = \sum E_k\ (i, l, m)$$

vi. Alternative Method/Data Substitution. If the chemical use data is missing the Permittee shall use the highest chemical use data reported for a month in the previous 12 month period.

P. ***Monitoring System for Fab Emission Units (Uncontrolled Evaporative Processes):*** **VOC Emissions from Chemical Delivery Module (CDM) units routed to VOC abatement.**
CDM units are being routed to VOC abatement units. The Permittee will account for the CDM VOC emissions after a CDM has been routed to VOC abatement as outlined below.

i. Parameter. Chemical use data for the site and emission factors for each applicable chemical and CDM system.

ii. Parameter Monitoring. Chemical use data for the site shall be tracked via the chemical data management system. The emission factors for each applicable chemical and CDM system will be published every 5 years.

iii. Recordkeeping. The Permittee shall maintain the following monitoring documentation pertaining to the control devices at the Intel Ocotillo Facility for five years from the date of each record:

- Chemical purchase data for each CDM chemical
- Emission factors every 5 years
- Monthly emission calculations of VOCs from CDM units for the site
- Fab-specific destruction removal efficiency from most recent VOC abatement performance testing event

iv. Monthly Calculations. Monthly emissions for each technology shall be calculated as follows:

$$E_k\ (i, l, m) = P_m * EF_{k,l,m} * \frac{1}{2000} * (1 - DRE_{n,VOC})$$

Where,
k = PAL pollutant (i.e., VOC)
l = CDM system model/generation (i.e., Gen 3, Gen 4, etc.)
m = chemical distributed via CDM systems (i.e., Chem 1, Chem 2, etc.)
n = Fab (i.e., Fab12, Fab 32S, etc.)
P_m = chemical purchase data for the month (pound)
$EF_{k,l,m}$ = Emission factor (pound of emissions/pound of chemical)
1/2000 = conversion from pounds to tons (tons/pound)
$DRE_{n,VOC}$ = Fab -specific VOC destruction removal efficiency from most recent performance testing (percent)

v. Monthly emission values shall be calculated for each CDM system using equations in sections N.iv and/or O.iv, as applicable, and summed together to obtain the total PAL pollutant emissions from systems as follows:

$$E_k\ (i) = \sum E_k\ (i, l, m)$$

vi. After a CDM is routed to VOC abatement *and* compliance testing of the associated VOC abatement is conducted, the CDM VOC calculation methodologies in Sections O and P of this appendix will become obsolete for the applicable CDM. Once performance testing of a VOC abatement system has been performed with the CDM(s) routed to it, VOC emissions from the CDM(s) will be accounted for by the calculations defined in section J of this appendix*: Monitoring System for Fab Emission Units: VOC emissions*.

vii. Alternative Method/Data Substitution. If the chemical use data is missing the Permittee shall use the highest chemical use data reported for a month in the previous 12-month period.

Q. ***Monitoring System for Fugitive Dust Emissions from Vehicular Traffic:*** **PM, PM_{10}, and $PM_{2.5}$**

i. Parameter. Vehicle miles travelled per month at each area.

ii. Parameter Monitoring. Vehicle miles travelled per month shall be calculated via the monitoring of number of vehicles authorized per month to be travelling at the applicable areas and the approximate number of trips per vehicle.

iii. Recordkeeping. The Permittee shall maintain the following monitoring documentation pertaining to the fugitive dust emission sources at the Ocotillo Facility for five years from the date of each record:

- Vehicle miles travelled per month at each area
- Monthly emission calculations of PM, PM_{10}, and $PM_{2.5}$ from vehicular traffic

iv. Monthly Calculations. Monthly emissions from vehicular traffic shall be calculated as follows for each fugitive dust emission source (i.e., unpaved roads, paved roads):

$$E_k\ (i, j) = \text{Vehicle Miles Travelled}\ (i, j) * \text{EF}\ (i, j, k) * \frac{1}{2000}$$

Where:
i = month during rolling 12-month period (i.e., January, February)
j = fugitive dust emission source (i.e., unpaved roads)
k = PAL pollutant (i.e., PM, PM_{10}, etc.)
E_k (i, j) = emissions of PAL pollutant from fugitive dust emission source (tons)
Vehicle Miles Travelled (i,j) = vehicle miles travelled at each area during month
EF (i, j, k) = PAL pollutant emission factor for fugitive dust area (lb/VMT)
1/2000 = conversion from pounds to tons (tons/pound)

v. Alternative Method/Data Substitution. If monthly vehicle miles travelled data is missing for any of areas, the Permittee shall substitute the highest vehicle miles travelled in a month for the applicable area in the previous 12 month period.

Q. ***Emergency Generator Engines and Fire Pump Engines:*** **GHG**

i. Parameter. Operating hours

ii. Parameter Monitoring. The Permittee shall monitor hours of operation for each engine via run-time meters installed on each engine.

iii. Recordkeeping. The Permittee shall maintain the following monitoring documentation for each engine for five years from the date of each record:

- Run time log of hours of operation;
- Monthly emission calculations for GHG pursuant to Subpart C factors; and
- The hourly fuel firing rate of each unit.

iv. Monthly Calculations. Monthly emissions from the emergency generator engines and fire pump engines shall be calculated by multiplying the hours of operation of each unit by the hourly firing rate and applying the fuel emissions factor found in the EPA GHG reporting rule at 40 CFR Part 98 Subpart C in equations C-1 and C-8 of that same subpart.

v. Alternative Method/Data Substitution. In the event of a failed/runaway run-hour meter, fuel levels, preventive maintenance (PM) logs and known activity/emergency events will be utilized to validate engine use during the month and utilize analogous/highest previous run hours for same PM and duration of any recorded emergency event to calculate emissions.

R. ***Natural Gas Units (all natural gas usage for the site):*** **GHG**

i. Parameter. Natural gas usage per month and natural gas higher heating value (HHV) for the month.

ii. Parameter Monitoring. Natural gas usage shall be monitored via natural gas meter(s). HHV of the natural gas shall be determined from natural gas supplier reports.

iii. Recordkeeping. The Permittee shall maintain the following monitoring documentation pertaining to natural gas fired units at the Ocotillo Facility for five years from the date of each record:

- Facility-wide natural gas usage per month;
- HHV of the natural gas for the month; and
- Monthly calculations of GHG emissions.

iv. Monthly Calculations. The Permittee shall calculate monthly emissions from the natural gas fired equipment using Equations C-2a and C-9a from 40 CFR Part 98 Subpart C and applying the Subpart C factors to the total monthly natural gas use and monthly HHV.

v. Alternative Method/Data Substitution. In the event of missing or invalid natural gas usage data, Intel shall utilize the previous 30-day historical statistical representation of natural gas usage during similar operations. In the event of missing or invalid HHV data, Intel shall utilize the average HHV of the natural gas used during the previous 12 months.

S. ***Fab Units:*** **GHG (not CO_2 and methane)**

i. Parameter. The parameters currently required by the 40 CFR Part 98 Subpart I emissions determination method include: GHG consumption allocated to types of processes and Point-of-Use (POU) downtime.

ii. Parameter Monitoring. GHG materials usage shall be monitored by utilizing the following equations to convert iCHEM, GCS, SIGAC, and/or WIINGs data, as appropriate for each material and outlined below. The Permittee shall monitor POU downtime via MES300, Fuzion, Fabguard, and/or ES as dictated by tool type for each applicable tool.

Equation S-1 below shows the calculation of consumption for input gas I, fab f, and part number, PN (the same GHG can be delivered in more than one container size, for example CO_2 is provided by cylinder and Tube Trailer, and each will have a different heel amount).

Equation S-1

$$C_{fiPN} = MoCPW_{fiPN}(1 - Heelfraction_{iPN}) \times \frac{1\ kg}{2.2.\ lb}$$

Where:
C_{fiPN} = monthly consumption of input gas i for fab f and part number PN (Kg)
$MoCPW_{fiPN}$ = Monthly total of iCHEM chemical purchases for input gas i for fab f and part number PN (Lb)
$Heelfraction_{iPN}$ = Heel size/Container size for input gas i and part number PN

Table S-1 shows a listing of GHG part numbers and their respective heels at the Ocotillo site.

Table S-1: Respective GHG Part Number, Container size, and Heel Fractions

Chemical Name	CAS No.	IPN	Availability (lb)	Container Type	Heel Fraction
C2F6	76-16-4	035660201	850.0	Cylinder	0.056
C4F6	685-63-2	500044244	48.0	Cabinet	0.040
C4F8	115-25-3	035686902	125.0	T Cylinder	0.107
C5F8	559-40-0	035687080	9.0	Steel Cylinder	0.526
CF4	75-73-0	035620100	66.4	Cabinet	0.052
CF4	75-73-0	035650100	537.9	Y Cylinder	0.064
CH2F2	75-10-5	500113107	9.0	UCG	0.250
CH3F	593-53-3	035825050	5.0	K Cylinder	0.167
CH3F	593-53-3	035640070	8.0	Cylinder (Steel)	0.500
CHF3	75-46-7	035620900	63.0	Aluminum	0.160
CHF3	75-46-7	035650900	530.0	Carbon Steel	0.272
CO2	124-38-9	500134540	540.0	920 Steel Ton	0.100
CO2	124-38-9	500044168	0.4	Carbon Steel	0.040
CO2	124-38-9	500189635	29000.0	Isotainer (Steel) tube trailer	0.094
N2O	10024-97-2	500096145	22567.9	Tube Trailer	0.023
N2O	10024-97-2	035679170	550.0	Y Cylinder	0.083
N2O	10024-97-2	500121318	16900.0	Isotainer (Steel) tube trailer	0.012
SF6	2551-62-4	035626501	81.0	200 Steel Cylinder	0.147
SF6	2551-62-4	035656500	1013.5	920 Steel Ton	0.053

For chemicals that will utilize the Gas Supplier's system, GCS, for material consumption (listed in Table S-2 below) the Permittee shall calculate monthly consumption using Equation S-2 below:

Equation S-2

$$C_{fiPN} = (MoTube_{fiPN} \times Tubesize_{iPN} \times (1 - Heelfraction_{iPN}) + BeginWt_{fiPN} - EndMoWt_{fiPN}) \times \frac{1\ kg}{2.2\ lb}$$

Where:
C_{fiPN} = Monthly consumption of input gas i for fab f and part number PN (Kg)

$MoTube_{fiPN}$ = Monthly total quantity of Tube Starts of input gas i for fab f and part number PN (#)
$Tubesize_{iPN}$ = Tube size of input gas i and part number PN (Lb)
$Heelfraction_{iPN}$ = Heel size/Container size for input gas i and part number PN
$BeginWt_{fiPN}$ = Beginning weight from a tube currently in use, either beginning of month or initial weight if started in month (Lb)
$EndMoWt_{fiPN}$ = End of month weight from a tube currently in use (Lb)

For chemicals that are monitored by pressure in GCS (listed in Table S-3 below), the Permittee shall calculate consumption via Equation S-3 below:

Equation S-3

$$C_{fiPN} = (MoTube_{fiPN} \times Tubesize_{iPN} \times (1 - Heelfraction_{iPN}) + (BegPress_{fiPN} - EndMoPress_{fiPN}) \times \frac{Weight}{Pressure} Ratio) \times \frac{1\ kg}{2.2\ lb}$$

Where:
C_{fiPN} = Monthly consumption of input gas i for fab f and part number PN (Kg)
$MoTube_{fiPN}$ = Monthly total quantity of Tube Starts of input gas i for fab f and part number PN (#)
$Tubesize_{iPN}$ = Tube size of input gas i and part number PN (Lb)
$Heelfraction_{iPN}$ = Heel size/Container size for input gas i and part number PN
$BeginPress_{fiPN}$ = Beginning pressure from a tube currently in use, either beginning of month or initial weight if started in month (psia)
$EndMoPress_{fiPN}$ = End of month pressure from a tube currently in use (psia)
$\frac{Weight}{Pressure} Ratio$ = Weight to pressure ratio for input gas i based on historical change-outs (Lb/psia)

Table S-2: GHGs Tracked in GCS by Weight

GHG Name	GHG Chemical Formula	GHG CAS Number
Octafluorocyclobutane	C4F8	115-25-3
Difluoromethane	CH2F2	75-10-5
Fluoromethane	CH3F	593-53-3
Sulfur hexafluoride	SF6	2551-62-4
Hexafluoro-2-butyne	C4F6	692-50-2
Carbon Dioxide	CO2	124-38-9

Table S-3: GHGs Tracked in GCS by Pressure

GHG Name	GHG Chemical Formula	GHG CAS Number
Tetrafluoromethane	CF4	75-73-0
Nitrous oxide	N2O	10024-97-2

Monthly consumption of all part numbers of input gas, i, shall be calculated and summed together to obtain the total consumption:

Equation S-4

$$C_{fi} = \sum_{1}^{\#\ of\ PN\ for\ i} C_{fiPN}$$

Where:

C_{fi}= Monthly consumption of input gas i for fab f (Kg)
C_{fiPN}= Monthly consumption of input gas i for fab f and part number PN (Kg)

As a secondary consumption calculation method, the Permittee shall utilize SIGAC data and calculate the material consumption of individual part numbers utilizing equation S-5 below:

Equation S-5

$$C_{fiPN} = MoSIGAC_{fiPN}(1 - Heelfraction_{iPN}) \times \frac{1\ kg}{2.2\ lb}$$

Where:

C_{fiPN}= Monthly consumption of input gas i for fab f and part number PN (Kg)
$MoSIGAC_{fiPN}$= Monthly total quantity of SIGAC MOVEIN transactions for input gas i for fab f and part number PN (#)
$Heelfraction_{iPN}$ = Heel size/Container size for input gas i and part number PN

Monthly consumption of all part numbers of input gas, i, from SIGAC data shall be calculated and summed together to obtain the total consumption:

Equation S-6

$$C_{fi} = \sum_{1}^{\#\ of\ PN\ for\ i} C_{fiPN}$$

Where:

C_{fi}= Monthly consumption of input gas i for fab f (Kg)
C_{fiPN}= Monthly consumption of input gas i for fab f and part number PN (Kg)

iii. Recordkeeping; Recordkeeping for GHG determinations for the fab operations will follow the recordkeeping required under the GHG reporting rule Subpart I (40 CFR § 98.97).

iv. Monthly Calculations. The Permittee shall calculate monthly GHG emissions following the procedures in 40 CFR Part § 98.93.

v. Alternative Method/Data Substitution. The Permittee shall replace any missing or erroneous data with quality assured data from the period immediately preceding the period of missing or erroneous data. Alternatively, the Permittee may estimate missing information on material use using records from the supplier.

T. ***Fab Units:*** **GHG (CO_2 and methane)**

i. Parameter. Wafer starts each month.

ii. Parameter Monitoring. Wafer start data shall be monitored via Permittee's production planners for the site.

iii. Recordkeeping. The Permittee shall maintain the following monitoring documentation for five years from the date of each record:

- Emission factors at least annually;
- Wafer start data per month for the site; and
- Monthly emission calculations of GHG emissions from CO_2 and methane for the site

iv. Monthly Calculations. Monthly emissions for the site shall be calculated as follows:

$$E(i,l,m) = EF_{l,m} \times WS_i \times \frac{1}{2000} \times GWP_m$$

Where,
i = month during rolling 12-month period (i.e., January, February, etc.)
l = technology (i.e. A, B, etc.)
m = chemical (CO2 or methane)
$EF_{l,m}$ = emission factor (lb of emissions/wafer start)
WS_i = wafer starts
GWP_m = global warming potential

v. Alternative Method/Data Substitution. If wafer start data is not available from the Permittee's production planners, the Permittee shall obtain wafer start data from the Permittee's Finance group.

U. ***Heat Transfer Fluids:*** **GHG**

i. Parameter: The monthly production activity ratio (PAR) for the site.

ii. Parameter Monitoring: The Permittee shall monitor monthly PAR for the site.

iii. Recordkeeping: Intel proposes to maintain the following monitoring documentation for five years from the date of each record:

- Annual emissions of heat transfer fluids;
- Monthly equipped production capacity; and
- Monthly calculations of GHG emissions.

iv. Monthly Calculations: The Permittee shall calculate monthly GHG emissions from the use fluorinated heat transfer fluids by converting the annual value from the previous year's GHG report required under 40 CFR Part 98 Subpart I and calculated in accordance with 40 CFR

98.93(h) to a monthly value by dividing the annual value by twelve and utilizing the PAR as outlined below.

Production Activity Ratio

$$PAR_j = \frac{current\ month\ equipped\ production\ capacity}{(monthly\ avg\ of\ equipped\ production\ capacity\ of\ previous\ 12\ months)}$$

Monthly HTF Emissions

$$HTF_j = \frac{EH_i}{12} \times \frac{2204.62}{2000} \times PAR_j$$

Where,

j = month during 12-month rolling period (January, February, etc.)

HTF_j = emissions of fluorinated GHG heat transfer fluid (tons)

EH_i = Emissions of fluorinated GHG heat transfer fluid (metric tons/year)

PAR_j = production activity ratio

v. Alternative Method/Data Substitution: If monthly equipped production capacity is not available from the site production planners, the Permittee shall obtain the data from the Finance group.

V. ***Wastewater Systems:*** **GHG**

i. Parameter. Average Chemical Oxygen Demand (COD) concentration and flowrate of industrial wastewater facility.

ii. Parameter Monitoring. The Permittee shall monitor the average weekly COD concentration of wastewater entering the wastewater treatment process and the weekly volume of wastewater sent to the wastewater treatment process.

iii. Recordkeeping. The Permittee shall maintain the following monitoring documentation for five years from the date of each record:

- COD concentration of wastewater entering the wastewater treatment process;
- Flowrate of wastewater sent to the wastewater treatment process; and
- Monthly calculations of GHG emissions.

iv. Monthly Calculations. The Permittee shall calculate monthly emissions from wastewater treatment operations as outlined in equation II-1 of 40 CFR § 98.353. The Permittee may adopt the annual emissions equation for monthly calculations by only utilizing the weekly data within each month. Equation II-1 is as follows:

$$CH_4G_n = \sum_{w=1} [Flow_w \times COD_w \times B_0 \times MCF \times 0.001]$$

Where:

CH_4G_n = Monthly mass CH_4 generated from the nth anaerobic wastewater treatment process (metric tons).

n = Index for processes at the facility, used in Equation II-7.

w = Index for weekly measurement period.

$Flow_w$ = Volume of wastewater sent to an anaerobic wastewater treatment process in week w (m^3/week), measured as specified in40 CFR §98.354(d).
COD_w = Average weekly concentration of chemical oxygen demand of wastewater entering an anaerobic wastewater treatment process (for week w)(kg/m^3), measured as specified in 40 CFR §98.354(b) and (c).
B_0 = Maximum CH_4 producing potential of wastewater (kg CH_4/kg COD), use the value 0.25.
MCF = CH_4 conversion factor, based on relevant values in Table II-1 of 40 CFR §98 Subpart II.
0.001 = Conversion factor from kg to metric tons.

v. Alternative Method/Data Substitution. If weekly COD concentration data is missing or weekly wastewater flowrate data are missing, the Permittee shall utilize the highest weekly COD concentration or highest weekly wastewater flowrate, respectively, in the previous 12-month period.

W. ***TriMix Units:*** **GHG**

i. Parameter. Amount of LCP purchased.
ii. Parameter Monitoring. The Permittee shall monitor the amount of LCP purchased each month.
iii. Recordkeeping. The Permittee shall maintain the following monitoring documentation for five years from the date of each record:
- Amount of LCP purchased in reporting month; and
- Monthly calculations of GHG emissions.

iv. Monthly Calculations. The Permittee shall calculate monthly emissions from the Trimix units as follows:

$$E_{TRMX} = \sum [EF \times LCP \times 298]$$

Where:
EF = N_2O emission factor for Trimix Units (lb N_2O per lb LCP)
LCP = amount of LCP purchased in reporting month (lb)
298 = N_2O global warming potential

v. Alternative Method/Data Substitution. If the amount of LCP purchased in the reporting month is missing, the Permittee shall utilize the highest monthly amount of LCP purchased in previous 12-month period.

APPENDIX C: EMISSIONS CREDITS

VOC Credits to be Utilized	Permit Number	Tons/yr
Penn Racquet (Closed)	V95001	98.0
Woodstuff Mfg./Nestle Waters/Grey Environmental Fund LP (Emission Bank Registry #13) (Closed)	V97009	80.0
All-Pro Finishes (Closed)	010233	8.4
NXP/Motorola (Closed)	F004512	8.0
Marathon (Closed)	140090	6.5
Bryant (Closed)	990502	4.4
TOTAL VOC for use in this application (204.3 Needed)		**205.3**

NOx Credits to be Utilized	Permit Number	Tons/yr
San Man (Closed)	090003	9.9
Penn Racquet (Closed)	V95001	4.0
NXP Freescale (Closed)	90209	3.0
Phoenix Brick (Closed)	090298	3.0
Granite Express Pioneer	P0008119	7.2
Bartlett Lake Marina	P0008285	16.9
Wood Unlimited	P0008262	7.4
Kilauea Crushers Inc - Picacho	P0008353	12.5
Kilauea Crushers Inc - Estrella	P0008354	16.3
Mayo Clinic Hospital	P0008311	3.5
Waste Management 7th Ave Landfill (Closed)	090001	4.0
Waste Management MERCs - Deer Valley	P0008316	11.2
Waste Management MERCs - Santan	P0008308	18.3
Waste Management MERCs - White Tank	P0008309	4.1
Superstition Crushing	Multiple Below	51.8
Rummel - Deer Valley	P0008363	
Vulcan Materials: Litchfield Landfill	P0008364	
Cemex - Indian School	P0008365	
Pioneer - Hassayampa	P0008366	
Superstition Crushing - Table Mesa Pit	P0008367	
Vulcan Materials - Indian School	P0008368	
Rummel - Verrado	P0008369	
Granite Construction - Tangerine	P0008370	
Vulcan - Sahuarita	P0008371	
CalPortland - Orange Grove	P0008372	
Cemex Central Avenue Plant (Closed)	970349	7.5
Custom Landscape - Turner	P0008276	5.4
CalPortland – New River Plant	P0007104	3.2
JBS Tolleson	P0007952	0.3
TOTAL NOx For Use in This Application (189.5 needed)		**189.5**