



State of Ohio Environmental Protection Agency

**RE: FINAL PERMIT TO INSTALL
JACKSON COUNTY**

CERTIFIED MAIL

Street Address:

122 S. Front Street

Lazarus Gov. Center TELE: (614) 644-3020 FAX: (614) 644-2329

Mailing Address:

Lazarus Gov. Center
P.O. Box 1049

Application No: 06-07375

DATE: 4/29/2004

Ohio Precious Metals Inc
Walter Luhrman
305 Water St
Jackson, OH 45640

Enclosed please find an Ohio EPA Permit to Install which will allow you to install the described source(s) in a manner indicated in the permit. Because this permit contains several conditions and restrictions, I urge you to read it carefully.

The Ohio EPA is urging companies to investigate pollution prevention and energy conservation. Not only will this reduce pollution and energy consumption, but it can also save you money. If you would like to learn ways you can save money while protecting the environment, please contact our Office of Pollution Prevention at (614) 644-3469.

You are hereby notified that this action by the Director is final and may be appealed to the Ohio Environmental Review Appeals Commission pursuant to Chapter 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. It must be filed within thirty (30) days after the notice of the Directors action. A copy of the appeal must be served on the Director of the Ohio Environmental Protection Agency within three (3) days of filing with the Commission. An appeal may be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission
309 South Fourth Street, Room 222
Columbus, Ohio 43215

Sincerely,

Michael W. Ahern, Supervisor
Field Operations and Permit Section
Division of Air Pollution Control

cc: USEPA

SEDO



**Permit To Install
Terms and Conditions**

**Issue Date: 4/29/2004
Effective Date: 4/29/2004**

FINAL PERMIT TO INSTALL 06-07375

Application Number: 06-07375
APS Premise Number: 0640010105
Permit Fee: **\$2600**
Name of Facility: Ohio Precious Metals Inc
Person to Contact: Walter Luhrman
Address: 305 Water St
Jackson, OH 45640

Location of proposed air contaminant source(s) [emissions unit(s)]:
**16064 Beaver Pike
Jackson, Ohio**

Description of proposed emissions unit(s):
Gold refining.

The above named entity is hereby granted a Permit to Install for the above described emissions unit(s) pursuant to Chapter 3745-31 of the Ohio Administrative Code. Issuance of this permit does not constitute expressed or implied approval or agreement that, if constructed or modified in accordance with the plans included in the application, the above described emissions unit(s) of environmental pollutants will operate in compliance with applicable State and Federal laws and regulations, and does not constitute expressed or implied assurance that if constructed or modified in accordance with those plans and specifications, the above described emissions unit(s) of pollutants will be granted the necessary permits to operate (air) or NPDES permits as applicable.

This permit is granted subject to the conditions attached hereto.

Ohio Environmental Protection Agency

Director

Part I - GENERAL TERMS AND CONDITIONS

A. Permit to Install General Terms and Conditions

1. Compliance Requirements

The emissions unit(s) identified in this Permit to Install shall remain in full compliance with all applicable State laws and regulations and the terms and conditions of this permit.

2. Reporting Requirements

The permittee shall submit required reports in the following manner:

- a. Reports of any required monitoring and/or recordkeeping information shall be submitted to the appropriate Ohio EPA District Office or local air agency.
- b. Except as otherwise may be provided in the terms and conditions for a specific emissions unit, quarterly written reports of (a) any deviations (excursions) from emission limitations, operational restrictions, and control device operating parameter limitations that have been detected by the testing, monitoring, and recordkeeping requirements specified in this permit, (b) the probable cause of such deviations, and (c) any corrective actions or preventive measures which have been or will be taken, shall be submitted to the appropriate Ohio EPA District Office or local air agency. If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted quarterly, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. (These quarterly reports shall exclude deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06.)

3. Records Retention Requirements

Each record of any monitoring data, testing data, and support information required pursuant to this permit shall be retained for a period of five years from the date the record was created. Support information shall include, but not be limited to, all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. Such records may be maintained in computerized form.

4. Inspections and Information Requests

The Director of the Ohio EPA, or an authorized representative of the Director, may, subject to the safety requirements of the permittee and without undue delay, enter upon the premises of this source at any reasonable time for purposes of making inspections, conducting tests, examining records or reports pertaining to any emission of air contaminants, and determining compliance with any applicable State air pollution laws and regulations and the terms and conditions of this permit. The permittee shall furnish to the Director of the Ohio EPA, or an authorized

representative of the Director, upon receipt of a written request and within a reasonable time, any information that may be requested to determine whether cause exists for modifying, reopening or revoking this permit or to determine compliance with this permit. Upon verbal or written request, the permittee shall also furnish to the Director of the Ohio EPA, or an authorized representative of the Director, copies of records required to be kept by this permit.

5. Scheduled Maintenance/Malfunction Reporting

Any scheduled maintenance of air pollution control equipment shall be performed in accordance with paragraph (A) of OAC rule 3745-15-06. The malfunction of any emissions units or any associated air pollution control system(s) shall be reported to the appropriate Ohio EPA District Office or local air agency in accordance with paragraph (B) of OAC rule 3745-15-06. Except as provided in that rule, any scheduled maintenance or malfunction necessitating the shutdown or bypassing of any air pollution control system(s) shall be accompanied by the shutdown of the emissions unit(s) that is (are) served by such control system(s).

6. Permit Transfers

Any transferee of this permit shall assume the responsibilities of the prior permit holder. The appropriate Ohio EPA District Office or local air agency must be notified in writing of any transfer of this permit.

7. Air Pollution Nuisance

The air contaminants emitted by the emissions units covered by this permit shall not cause a public nuisance, in violation of OAC rule 3745-15-07.

8. Termination of Permit to Install

This Permit to Install shall terminate within eighteen months of the effective date of the Permit to Install if the owner or operator has not undertaken a continuing program of installation or modification or has not entered into a binding contractual obligation to undertake and complete within a reasonable time a continuing program of installation or modification. This deadline may be extended by up to 12 months if application is made to the Director within a reasonable time before the termination date and the party shows good cause for any such extension.

9. Construction of New Sources(s)

The proposed emissions unit(s) shall be constructed in strict accordance with the plans and application submitted for this permit to the Director of the Ohio Environmental Protection Agency. There may be no deviation from the approved plans without the express, written approval of the Agency. Any deviations from the approved plans or the above conditions may lead to such sanctions and penalties as provided under Ohio law. Approval of these plans does not constitute an assurance that the proposed facilities will operate in compliance with all Ohio laws and regulations. Additional facilities shall be installed upon orders of the Ohio

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Environmental Protection Agency if the proposed sources cannot meet the requirements of this permit or cannot meet applicable standards.

If the construction of the proposed emissions unit(s) has already begun or has been completed prior to the date the Director of the Environmental Protection Agency approves the permit application and plans, the approval does not constitute expressed or implied assurance that the proposed facility has been constructed in accordance with the approved plans. The action of beginning and/or completing construction prior to obtaining the Director's approval constitutes a violation of OAC rule 3745-31-02. Furthermore, issuance of the Permit to Install does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. Approval of the plans in any case is not to be construed as an approval of the facility as constructed and/or completed. Moreover, issuance of the Permit to Install is not to be construed as a waiver of any rights that the Ohio Environmental Protection Agency (or other persons) may have against the applicant for starting construction prior to the effective date of the permit. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed facilities cannot meet the requirements of this permit or cannot meet applicable standards.

10. Public Disclosure

The facility is hereby notified that this permit, and all agency records concerning the operation of this permitted source, are subject to public disclosure in accordance with OAC rule 3745-49-03.

11. Applicability

This Permit To Install is applicable only to the emissions unit(s) identified in the Permit To Install. Separate Permit To Install for the installation or modification of any other emissions unit(s) are required for any emissions unit for which a Permit To Install is required.

12. Best Available Technology

As specified in OAC Rule 3745-31-05, all new sources must employ Best Available Technology (BAT). Compliance with the terms and conditions of this permit will fulfill this requirement.

13. Source Operation and Operating Permit Requirements After Completion of Construction

This facility is permitted to operate each source described by this Permit to Install for a period of up to one year from the date the source commenced operation. This permission to operate is granted only if the facility complies with all requirements contained in this permit and all applicable air pollution laws, regulations, and policies. Pursuant to OAC Chapter 3745-35, the permittee shall submit a complete operating permit application within ninety (90) days after commencing operation of the emissions unit(s) covered by this permit.

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14. Construction Compliance Certification

The applicant shall provide Ohio EPA with a written certification (see enclosed form) that the facility has been constructed in accordance with the Permit to Install application and the terms and conditions of the Permit to Install. The certification shall be provided to Ohio EPA upon completion of construction but prior to startup of the source.

15. Fees

The permittee shall pay fees to the Director of the Ohio EPA in accordance with ORC section 3745.11 and OAC Chapter 3745-78. The permittee shall pay all applicable Permit to Install fees within 30 days after the issuance of this Permit to Install.

B. Permit to Install Summary of Allowable Emissions

The following information summarizes the total allowable emissions, by pollutant, based on the individual allowable emissions of each air contaminant source identified in this permit.

SUMMARY (for informational purposes only)
 TOTAL PERMIT TO INSTALL ALLOWABLE EMISSIONS

<u>Pollutant</u>	<u>Tons Per Year</u>
NO _x	11.1
SO ₂	0.5
HCl	0.5

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Issued

Facility ID: 0640010105

Emissions Unit ID: P001

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

- 1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	OAC rule 3745-17-07(A) OAC rule 3745-17-11(B)
P001 - Crude Gold Kettle 1 vented to a wet scrubber	OAC rule 3745-31-05(A)(3)	OAC rule 3745-23-06

Applicable Emissions
Limitations/Control Measures

This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

There shall be no visible emissions other than water vapor from the scrubber exhaust stack.

See A.2.b. below.

Nitrogen Oxide Compounds (NO_x) emissions shall not exceed :
0.165 lb NO_x/ lb fine gold,
8.8 lb NO_x / day,
1.6 TPY

Hydrochloric acid (HCl) emissions shall not exceed:
0.003 lb HCl/ lb fine gold,
0.16 lb HCl / day,
0.029 TPY

Use of Best Available Control Methods to minimize fugitive emissions from this emission unit.

See A.2.a. below.

Particulate emissions (PE) are not anticipated from this emission unit.

The emission limitations specified in these rules are less stringent than the emission limitations established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a** The enclosure has been designed using corrosion resistant materials with adequate containment and air flow to minimize fugitive emissions in accordance with good engineering practices. These enclosures are necessary for employee safety. Therefore no recordkeeping or reporting is necessary to ensure proper operation.
- 2.b** The no visible emission limit pertains to NO_x and acid emissions. Visible emissions evaluations are based on color, rather than opacity.

B. Operational Restrictions

1. The permittee shall maintain the water flow rate, pressure drop and the pH range for the scrubber at the following levels while the emission unit is in operation:
 - a. a flow rate of not less than 396 gallons per minute (gpm) (@ 9000 cfm inlet gas flow) in stage-1 and 702 gallons per minute (gpm) (@ 9000 cfm inlet gas flow) in stage-2.
 - b. a pressure drop range of 6.0 to 8.5 inches of water.
 - c. a pH range of 5.5 to 7.5 in stage-1 and 6.0 to 9.5 in stage-2.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall properly install, operate and maintain equipment to continuously monitor and record on a continuous chart recorder the pH while the emission unit is in operation. The flow rate and the pressure drop in stage-1 and in stage-2 of the scrubber shall also be monitored while the emission unit is in operation. The monitoring equipment shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
2. The permittee shall collect and record the following information :
 - a. The pH of the scrubber in stage-1 and in stage-2 (the continuous chart recorder will meet this requirement).
 - b. The flow rate (in gpm) in the scrubber stage-1 and stage-2, on a daily basis at a minimum.
 - c. The pressure drop (in inches of water) of the scrubber (stage-1 and stage-2) on a daily basis at a minimum.

- d. A log or record of the downtime for the collection system, control device, monitoring equipment, and the associated emission unit(s) which were operating during the downtime period.
3. The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions (except water vapor) from the stack serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. the total duration of any visible emission incident; and
 - c. any corrective actions taken to eliminate the visible emissions.
 4. The permit to install for emissions units, P001 - P005 and P008 - P015 was evaluated based on the maximum total materials and the design parameters of the emissions unit's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

Pollutant: hydrochloric acid

TLV (mg/m³): 7.5 mg/m³

Maximum Hourly Emission Rate (lbs/hr): 2.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level

Concentration (ug/m³): 71.53 ug/m³

MAGLC (ug/m³): 179 ug/m³

Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will

Emissions Unit ID: P001

not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the "Air Toxic Policy" include the following:

- a. Changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;
- b. Changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and,
- c. Physical changes to the emissions unit or its exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

5. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy":
 - a. A description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);
 - b. Documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and,
 - c. Where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify all periods of time during which the water flow rate, the pressure drop, and the pH did not comply with the allowable values specified above for this emission unit. The reports shall identify the cause(s) (if known) of the excursion, duration of the excursion, applicable operating rates during the

Emissions Unit ID: **P001**

excursion, and the corrective actions which were taken for each excursion. These reports shall be submitted in accordance with the General Terms and Conditions of this permit.

If an excursion did not occur during the reporting period, then a report stating that fact is required.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions were observed from the stack serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Ohio EPA, Southeast District Office by January 31 and July 31 of each year and shall cover the previous 6-month period.

E. Testing Requirements

1. a. Emission Limitation: This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

Applicable Compliance Method: Compliance shall be demonstrated based upon emissions testing in accordance with methods and procedures in section E.2.

- b. Emission Limitation: Nitrogen Oxide Compounds (NO_x) emissions shall not exceed :
 0.165 lb NO_x/ lb fine gold,
 8.8 lb NO_x / day,
 1.6 TPY

Applicable Compliance Method: Compliance shall be demonstrated using the following equation for potential to emit:

22.416 lb NO_x per batch {based on stoichiometry balanced chemical reaction data}
 12 hrs per batch, 6 hours reaction time and 6 hours boiling time
 1 batch per day
 1500 troy ounces crude metal per batch
 90% scrubber control, 95% capture (based on application information)

$(61.0 \text{ lb NO}_x/\text{batch unc.}) (90\%\text{control (95\% capture)}) / (1500 \text{ troy oz crude metal (52\% gold)}) / 14.58 \text{ troy oz / lb} = 0.165 \text{ lb NO}_x/\text{ lb gold}$

$0.165 \text{ lb NO}_x/\text{ lb gold (53.5 lb gold/day/batch)} = 8.8 \text{ lb NO}_x/\text{day}$

$8.8 \text{ lb NO}_x/\text{day (365 d/yr) (1/2000 lb / ton)} = 1.6 \text{ TPY NO}_x$

If required, the permittee shall demonstrate compliance with the lb NO_x / lb gold emission limitation in accordance with 40 CFR Part 60, Appendix A, Method 7E. Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

- c. Emission Limitation: Hydrochloric acid (HCl) emissions shall not exceed:
 0.003 lb HCl/ lb fine gold,
 0.16 lb HCl / day,
 0.029 TPY

Applicable Compliance Method: Compliance shall be demonstrated using the following equation for potential to emit:

12 hrs per reaction (batch)
 1 batch per day
 30 gallons HCl 'lost' per batch
 1500 troy oz crude metal per batch
 90% scrubber control, 95% capture (based on application information)

$(1.1 \text{ lb HCl/batch unc.}) (90\% \text{ control } (95\% \text{ capture})) / (1500 \text{ troy oz crude metal } (52\% \text{ gold})) / 14.58 \text{ troy oz / lb} = 0.003 \text{ lb HCl/ lb gold}$

$0.003 \text{ lb HCl/lb gold } (53.5 \text{ lb gold/batch})(1 \text{ batch/day}) = 1.6 \text{ lb HCl / day}$

$1.6 \text{ lb HCl / day } (365 \text{ d/yr})(1/2000 \text{ lb/ton}) = 0.029 \text{ TPY HCl}$

If required, the permittee shall demonstrate compliance with the lb/lb gold emission limitation in accordance with 40 CFR Part 60, Appendix A, Method 26 or 26A. Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

- d. Emission Limitation: There shall be no visible emissions other than water vapor from the scrubber exhaust stack.

Applicable Compliance Method: Compliance shall be demonstrated based upon Test Method 22-like visible emission observations. (Although Test Method 22 applies to fugitive emissions units, the visible/no visible emissions observation technique of 40 CFR

Part 60, Appendix A, Method 22 can be applied to ducted emissions, i.e., Test Method 22-like visible emissions observations.)

2. The permittee shall conduct, or have conducted, an initial emission test for this emissions unit within 6 months after the startup of the emission unit.

The emission testing shall be conducted to demonstrate that the 2-stage wet scrubber serving emissions units P001 - P005 and P008 - P015 is in compliance with the 90% removal efficiency limitation for nitrogen oxide compounds, sulfur dioxide and hydrochloric acid .

The following test method(s) shall be employed to demonstrate compliance with the removal efficiency requirement for the two-stage scrubber:

Methods 1-4 and 6C for SO₂,

Methods 1-4 and 7E for NO_x, and

Methods 1-4 and 26 or 26A for HCl .

Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA. (The Ohio EPA will consider the request, including an evaluation of the applicability, necessity, and validity of the alternative, and may approve the use of the alternative if such approval does not contravene any other applicable requirement.) The test method and procedures selected shall be based on a consideration of the diversity of the organic species present and their total concentration, and on a consideration of the potential presence of interfering gases.

The control efficiency (i.e., the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined by calculating the percent reduction in mass emissions between the inlet and outlet of the control system.

The test shall be conducted while the emissions unit(s) is operating at or near its maximum capacity, unless otherwise specified or approved by the Ohio EPA, Southeast District Office.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA, Southeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA, Southeast District Office's refusal to accept the results of the emission test(s).

Personnel from the Ohio EPA, Southeast District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the

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Emissions Unit ID: **P001**

emissions from the emissions unit and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA, Southeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA, Southeast District Office.

F. Miscellaneous Requirements

None.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

- 1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	OAC rule 3745-17-07(A) OAC rule 3745-17-11(B)
P002 - Crude Gold Kettle 2 vented to a wet scrubber	OAC rule 3745-31-05(A)(3)	OAC rule 3745-23-06

Ohio 1**PTI A****Issued: 4/29/2004**Emissions Unit ID: **P002**

Applicable Emissions
Limitations/Control Measures

This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

There shall be no visible emissions other than water vapor from the scrubber exhaust stack.

See A.2.b. below.

Nitrogen Oxide Compounds (NO_x) emissions shall not exceed :
0.165 lb NO_x/ lb fine gold,
8.8 lb NO_x / day,
1.6 TPY

Hydrochloric acid (HCl) emissions shall not exceed:

0.003 lb HCl/ lb fine gold,
0.16 lb HCl / day,
0.029 TPY

Use of Best Available Control Methods to minimize fugitive emissions from this emission unit.

See A.2.a. below.

Particulate emissions (PE) are not anticipated from this emission unit.

The emission limitations specified in these rules are less stringent than the emission limitations established

pursuant to OAC rule
3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a** The enclosure has been designed using corrosion resistant materials with adequate containment and air flow to minimize fugitive emissions in accordance with good engineering practices. These enclosures are necessary for employee safety. Therefore no recordkeeping or reporting is necessary to ensure proper operation.
- 2.b** The no visible emission limit pertains to NO_x and acid emissions. Visible emissions evaluations are based on color, rather than opacity.

B. Operational Restrictions

1. The permittee shall maintain the water flow rate, pressure drop and the pH range for the scrubber at the following levels while the emission unit is in operation:
- a. a flow rate of not less than 396 gallons per minute (@ 9000 cfm inlet gas flow) in stage-1 and 702 gallons per minute (@ 9000 cfm inlet gas flow) in stage-2.
 - b. a pressure drop range of 6.0 to 8.5 inches of water.
 - c. a pH range of 5.5 to 7.5 in stage-1 and 6.0 to 9.5 in stage-2.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall properly install, operate and maintain equipment to continuously monitor and record on a continuous chart recorder the pH while the emission unit is in operation. The flow rate and the pressure drop in stage-1 and in stage-2 of the scrubber shall also be monitored while the emission unit is in operation. The monitoring equipment shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
2. The permittee shall collect and record the following information :
- a. The pH of the scrubber in stage-1 and in stage-2 (the continuous chart recorder will meet this requirement).
 - b. The flow rate (in gpm) in the scrubber stage-1 and stage-2, on a daily basis at a minimum.
 - c. The pressure drop (in inches of water) of the scrubber (stage-1 and stage-2) on a daily basis at a minimum.

- d. A log or record of the downtime for the collection system, control device, monitoring equipment, and the associated emission unit(s) which were operating during the downtime period.
3. The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions (except water vapor) from the stack serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. the total duration of any visible emission incident; and
 - c. any corrective actions taken to eliminate the visible emissions.
 4. The permit to install for emissions units, P001 - P005 and P008 - P015 was evaluated based on the maximum total materials and the design parameters of the emissions unit's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

Pollutant: hydrochloric acid

TLV (mg/m³): 7.5 mg/m³

Maximum Hourly Emission Rate (lbs/hr): 2.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level
Concentration (ug/m³): 71.53 ug/m³

MAGLC (ug/m³): 179 ug/m³

Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters

used in applying the "Air Toxic Policy" include the following:

- a. Changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;
- b. Changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and,
- c. Physical changes to the emissions unit or its exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

5. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"
 - a. A description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);
 - b. Documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and,
 - c. Where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify all periods of time during which the water flow rate, the pressure drop, and the pH did not comply with the allowable values specified above for this emission unit. The reports shall identify the cause(s) (if known) of the excursion, duration of the excursion, applicable operating rates during the excursion, and the corrective actions which were taken for each excursion. These reports shall be

submitted in accordance with the General Terms and Conditions of this permit.

If an exceedance did not occur during the reporting period, then a report stating that fact is required.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions were observed from the stack serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Ohio EPA, Southeast District Office by January 31 and July 31 of each year and shall cover the previous 6-month period.

E. Testing Requirements

1. a. Emission Limitation: This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

Applicable Compliance Method: Compliance shall be demonstrated based upon emissions testing in accordance with methods and procedures in section E.2.

- b. Emission Limitation: Nitrogen Oxide Compounds (NO_x) emissions shall not exceed :
 0.165 lb NO_x/ lb fine gold,
 8.8 lb NO_x / day,
 1.6 TPY

Applicable Compliance Method: Compliance shall be demonstrated using the following equation for potential to emit:

22.416 lb NO_x per batch {based on stoichiometry balanced chemical reaction data}
 12 hrs per batch, 6 hours reaction time and 6 hours boiling time
 1 batch per day
 1500 troy ounces crude metal per batch
 90% scrubber control, 95% capture (based on application information)

$(61.0 \text{ lb NO}_x/\text{batch unc.}) (90\%\text{control (95\% capture)}) / (1500 \text{ troy oz crude metal (52\% gold)}) / 14.58 \text{ troy oz / lb} = 0.165 \text{ lb NO}_x/\text{ lb gold}$

$0.165 \text{ lb NO}_x/\text{ lb gold} (53.5 \text{ lb gold/day/batch}) = 8.8 \text{ lb NO}_x/\text{day}$

$8.8 \text{ lb NO}_x/\text{day} (365 \text{ d/yr}) (1/2000 \text{ lb / ton}) = 1.6 \text{ TPY NO}_x$

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If required, the permittee shall demonstrate compliance with the lb NO_x / lb gold emission limitation in accordance with 40 CFR Part 60, Appendix A, Method 7E. Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

- c. Emission Limitation: Hydrochloric acid (HCl) emissions shall not exceed:
 0.003 lb HCl/ lb fine gold,
 0.16 lb HCl / day,
 0.029 TPY

Applicable Compliance Method: Compliance shall be demonstrated using the following equation for potential to emit:

12 hrs per reaction (batch)
 1 batch per day
 30 gallons HCl 'lost' per batch
 1500 troy oz crude metal per batch
 90% scrubber control, 95% capture (based on application information)

$(1.1 \text{ lb HCl/batch unc.}) (90\% \text{ control } (95\% \text{ capture})) / (1500 \text{ troy oz crude metal } (52\% \text{ gold})) / 14.58 \text{ troy oz / lb} = 0.003 \text{ lb HCl/ lb gold}$

$0.003 \text{ lb HCl/lb gold } (53.5 \text{ lb gold/batch})(1 \text{ batch/day}) = 1.6 \text{ lb HCl / day}$

$1.6 \text{ lb HCl / day } (365 \text{ d/yr})(1/2000 \text{ lb/ton}) = 0.029 \text{ TPY HCl}$

If required, the permittee shall demonstrate compliance with the lb/lb gold emission limitation in accordance with 40 CFR Part 60, Appendix A, Method 26 or 26A. Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

- d. Emission Limitation: There shall be no visible emissions other than water vapor from the scrubber exhaust stack.

Applicable Compliance Method: Compliance shall be demonstrated based upon Test Method 22-like visible emission observations. (Although Test Method 22 applies to fugitive emissions units, the visible/no visible emissions observation technique of 40 CFR Part 60, Appendix A, Method 22 can be applied to ducted emissions, i.e., Test Method 22-like visible emissions observations.)

2. The permittee shall conduct, or have conducted, an initial emission test for this emissions unit within 6 months after the startup of the emission unit.

The emission testing shall be conducted to demonstrate that the 2-stage wet scrubber serving emissions units P001 - P005 and P008 - P015 is in compliance with the 90% removal efficiency limitation for nitrogen oxide compounds, sulfur dioxide and hydrochloric acid .

The following test method(s) shall be employed to demonstrate compliance with the removal efficiency requirement for the two-stage scrubber:

Methods 1-4 and 6C for SO₂,

Methods 1-4 and 7E for NO_x, and

Methods 1-4 and 26 or 26A for HCl .

Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA. (The Ohio EPA will consider the request, including an evaluation of the applicability, necessity, and validity of the alternative, and may approve the use of the alternative if such approval does not contravene any other applicable requirement.) The test method and procedures selected shall be based on a consideration of the diversity of the organic species present and their total concentration, and on a consideration of the potential presence of interfering gases.

The control efficiency (i.e., the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined by calculating the percent reduction in mass emissions between the inlet and outlet of the control system.

The test shall be conducted while the emissions unit(s) is operating at or near its maximum capacity, unless otherwise specified or approved by the Ohio EPA, Southeast District Office.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA, Southeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA, Southeast District Office's refusal to accept the results of the emission test(s).

Personnel from the Ohio EPA, Southeast District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

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A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA, Southeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA, Southeast District Office.

F. Miscellaneous Requirements

None.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

- 1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	OAC rule 3745-17-07(A) OAC rule 3745-17-11(B)
P003 - Crude Gold Kettle 3 vented to a wet scrubber	OAC rule 3745-31-05(A)(3)	OAC rule 3745-23-06

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Applicable Emissions
Limitations/Control Measures

This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

There shall be no visible emissions other than water vapor from the scrubber exhaust stack.

See A.2.b. below.

Nitrogen Oxide Compounds (NO_x) emissions shall not exceed :
0.165 lb NO_x/ lb fine gold,
8.8 lb NO_x / day,
1.6 TPY

Hydrochloric acid (HCl) emissions shall not exceed:
0.003 lb HCl/ lb fine gold,
0.16 lb HCl / day,
0.029 TPY

Use of Best Available Control Methods to minimize fugitive emissions from this emission unit.

See A.2.a. below.

Particulate emissions (PE) are not anticipated from this emission unit.

The emission limitations specified in these rules are less stringent than the emission limitations established pursuant to OAC rule

3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a** The enclosure has been designed using corrosion resistant materials with adequate containment and air flow to minimize fugitive emissions in accordance with good engineering practices. These enclosures are necessary for employee safety. Therefore no recordkeeping or reporting is necessary to ensure proper operation.
- 2.b** The no visible emission limit pertains to NO_x and acid emissions. Visible emissions evaluations are based on color, rather than opacity.

B. Operational Restrictions

1. The permittee shall maintain the water flow rate, pressure drop and the pH range for the scrubber at the following levels while the emission unit is in operation:
 - a. a flow rate of not less than 396 gallons per minute (@ 9000 cfm inlet gas flow) in stage-1 and 702 gallons per minute (@ 9000 cfm inlet gas flow) in stage-2.
 - b. a pressure drop range of 6.0 to 8.5 inches of water.
 - c. a pH range of 5.5 to 7.5 in stage-1 and 6.0 to 9.5 in stage-2.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall properly install, operate and maintain equipment to continuously monitor and record on a continuous chart recorder the pH while the emission unit is in operation. The flow rate and the pressure drop in stage-1 and in stage-2 of the scrubber shall also be monitored while the emission unit is in operation. The monitoring equipment shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
2. The permittee shall collect and record the following information :
 - a. The pH of the scrubber in stage-1 and in stage-2 (the continuous chart recorder will meet this requirement).
 - b. The flow rate (in gpm) in the scrubber stage-1 and stage-2, on a daily basis at a minimum.
 - c. The pressure drop (in inches of water) of the scrubber (stage-1 and stage-2) on a daily basis at a minimum.

- d. A log or record of the downtime for the collection system, control device, monitoring equipment, and the associated emission unit(s) which were operating during the downtime period.
3. The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions (except water vapor) from the stack serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. the total duration of any visible emission incident; and
 - c. any corrective actions taken to eliminate the visible emissions.
 4. The permit to install for emissions units, P001 - P005 and P008 - P015 was evaluated based on the maximum total materials and the design parameters of the emissions unit's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

Pollutant: hydrochloric acid

TLV (mg/m³): 7.5 mg/m³

Maximum Hourly Emission Rate (lbs/hr): 2.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level
Concentration (ug/m³): 71.53 ug/m³

MAGLC (ug/m³): 179 ug/m³

Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters

used in applying the "Air Toxic Policy" include the following:

- a. Changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;
- b. Changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and,
- c. Physical changes to the emissions unit or its exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

5. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"
 - a. A description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);
 - b. Documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and,
 - c. Where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify all periods of time during which the water flow rate, the pressure drop, and the pH did not comply with the allowable values specified above for this emission unit. The reports shall identify the cause(s) (if known) of the excursion, duration of the excursion, applicable operating rates during the

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excursion, and the corrective actions which were taken for each excursion. These reports shall be submitted in accordance with the General Terms and Conditions of this permit.

If an excursion did not occur during the reporting period, then a report stating that fact is required.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions were observed from the stack serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Ohio EPA, Southeast District Office by January 31 and July 31 of each year and shall cover the previous 6-month period.

E. Testing Requirements

1. a. Emission Limitation: This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

Applicable Compliance Method: Compliance shall be demonstrated based upon emissions testing in accordance with methods and procedures in section E.2.

- b. Emission Limitation: Nitrogen Oxide Compounds (NO_x) emissions shall not exceed :
 0.165 lb NO_x/ lb fine gold,
 8.8 lb NO_x / day,
 1.6 TPY

Applicable Compliance Method: Compliance shall be demonstrated using the following equation for potential to emit:

22.416 lb NO_x per batch {based on stoichiometry balanced chemical reaction data}
 12 hrs per batch, 6 hours reaction time and 6 hours boiling time
 1 batch per day
 1500 troy ounces crude metal per batch
 90% scrubber control, 95% capture (based on application information)

$(61.0 \text{ lb NO}_x/\text{batch unc.}) (90\%\text{control (95\% capture)}) / (1500 \text{ troy oz crude metal (52\% gold)}) / 14.58 \text{ troy oz / lb} = 0.165 \text{ lb NO}_x/\text{ lb gold}$

$0.165 \text{ lb NO}_x/\text{ lb gold (53.5 lb gold/day/batch)} = 8.8 \text{ lb NO}_x/\text{day}$

$8.8 \text{ lb NO}_x/\text{day (365 d/yr) (1/2000 lb / ton)} = 1.6 \text{ TPY NO}_x$

If required, the permittee shall demonstrate compliance with the lb NO_x / lb gold emission limitation in accordance with 40 CFR Part 60, Appendix A, Method 7E. Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

- c. Emission Limitation: Hydrochloric acid (HCl) emissions shall not exceed:
 0.003 lb HCl/ lb fine gold,
 0.16 lb HCl/ day,
 0.029 TPY

Applicable Compliance Method: Compliance shall be demonstrated using the following equation for potential to emit:

12 hrs per reaction (batch)
 1 batch per day
 30 gallons HCl 'lost' per batch
 1500 troy oz crude metal per batch
 90% scrubber control, 95% capture (based on application information)

$(1.1 \text{ lb HCl/batch unc.}) (90\% \text{ control } (95\% \text{ capture})) / (1500 \text{ troy oz crude metal } (52\% \text{ gold})) / 14.58 \text{ troy oz / lb} = 0.003 \text{ lb HCl/ lb gold}$

$0.003 \text{ lb HCl/lb gold } (53.5 \text{ lb gold/batch})(1 \text{ batch/day}) = 1.6 \text{ lb HCl / day}$

$1.6 \text{ lb HCl / day } (365 \text{ d/yr})(1/2000 \text{ lb/ton}) = 0.029 \text{ TPY HCl}$

If required, the permittee shall demonstrate compliance with the lb/lb gold emission limitation in accordance with 40 CFR Part 60, Appendix A, Method 26 or 26A. Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

- d. Emission Limitation: There shall be no visible emissions other than water vapor from the scrubber exhaust stack.
- Applicable Compliance Method: Compliance shall be demonstrated based upon Test Method 22-like visible emission observations. (Although Test Method 22 applies to fugitive emissions units, the visible/no visible emissions observation technique of 40 CFR Part 60, Appendix A, Method 22 can be applied to ducted emissions, i.e., Test Method 22-like visible emissions observations.)
2. The permittee shall conduct, or have conducted, an initial emission test for this emissions unit within 6 months after the startup of the emission unit.

The emission testing shall be conducted to demonstrate that the 2-stage wet scrubber serving

emissions units P001 - P005 and P008 - P015 is in compliance with the 90% removal efficiency limitation for nitrogen oxide compounds, sulfur dioxide and hydrochloric acid .

The following test method(s) shall be employed to demonstrate compliance with the removal efficiency requirement for the two-stage scrubber:

Methods 1-4 and 6C for SO₂,

Methods 1-4 and 7E for NO_x, and

Methods 1-4 and 26 or 26A for HCl .

Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA. (The Ohio EPA will consider the request, including an evaluation of the applicability, necessity, and validity of the alternative, and may approve the use of the alternative if such approval does not contravene any other applicable requirement.) The test method and procedures selected shall be based on a consideration of the diversity of the organic species present and their total concentration, and on a consideration of the potential presence of interfering gases.

The control efficiency (i.e., the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined by calculating the percent reduction in mass emissions between the inlet and outlet of the control system.

The test shall be conducted while the emissions unit(s) is operating at or near its maximum capacity, unless otherwise specified or approved by the Ohio EPA, Southeast District Office.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA, Southeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA, Southeast District Office's refusal to accept the results of the emission test(s).

Personnel from the Ohio EPA, Southeast District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA, Southeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA, Southeast District Office.

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F. Miscellaneous Requirements

None.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	OAC rule 3745-17-07(A) OAC rule 3745-17-11(B)
P004 - Crude Gold Kettle 4 vented to a wet scrubber	OAC rule 3745-31-05(A)(3)	OAC rule 3745-23-06

Applicable Emissions
Limitations/Control Measures

This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

There shall be no visible emissions other than water vapor from the scrubber exhaust stack.

See A.2.b. below.

Nitrogen Oxide Compounds (NO_x) emissions shall not exceed :
0.165 lb NO_x/ lb fine gold,
8.8 lb NO_x / day,
1.6 TPY

Hydrochloric acid (HCl) emissions shall not exceed:

0.003 lb HCl/ lb fine gold,
0.16 lb HCl / day,
0.029 TPY

Use of Best Available Control Methods to minimize fugitive emissions from this emission unit.

See A.2.a. below.

Particulate emissions (PE) are not anticipated from this emission unit.

The emission limitations specified in these rules are less stringent than the emission limitations established pursuant to OAC rule

3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a** The enclosure has been designed using corrosion resistant materials with adequate containment and air flow to minimize fugitive emissions in accordance with good engineering practices. These enclosures are necessary for employee safety. Therefore no recordkeeping or reporting is necessary to ensure proper operation.
- 2.b** The no visible emission limit pertains to NO_x and acid emissions. Visible emissions evaluations are based on color, rather than opacity.

B. Operational Restrictions

1. The permittee shall maintain the water flow rate, pressure drop and the pH range for the scrubber at the following levels while the emission unit is in operation:
 - a. a flow rate of not less than 396 gallons per minute (@ 9000 cfm inlet gas flow) in stage-1 and 702 gallons per minute (@ 9000 cfm inlet gas flow) in stage-2.
 - b. a pressure drop range of 6.0 to 8.5 inches of water.
 - c. a pH range of 5.5 to 7.5 in stage-1 and 6.0 to 9.5 in stage-2.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall properly install, operate and maintain equipment to continuously monitor and record on a continuous chart recorder the pH while the emission unit is in operation. The flow rate and the pressure drop in stage-1 and in stage-2 of the scrubber shall also be monitored while the emission unit is in operation. The monitoring equipment shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
2. The permittee shall collect and record the following information :
 - a. The pH of the scrubber in stage-1 and in stage-2 (the continuous chart recorder will meet this requirement).
 - b. The flow rate (in gpm) in the scrubber stage-1 and stage-2, on a daily basis at a minimum.
 - c. The pressure drop (in inches of water) of the scrubber (stage-1 and stage-2) on a daily basis at a minimum.

- d. A log or record of the downtime for the collection system, control device, monitoring equipment, and the associated emission unit(s) which were operating during the downtime period.
3. The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions (except water vapor) from the stack serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. the total duration of any visible emission incident; and
 - c. any corrective actions taken to eliminate the visible emissions.
 4. The permit to install for emissions units, P001 - P005 and P008 - P015 was evaluated based on the maximum total materials and the design parameters of the emissions unit's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

Pollutant: hydrochloric acid

TLV (mg/m³): 7.5 mg/m³

Maximum Hourly Emission Rate (lbs/hr): 2.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level
Concentration (ug/m³): 71.53 ug/m³

MAGLC (ug/m³): 179 ug/m³

Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters

used in applying the "Air Toxic Policy" include the following:

- a. Changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;
- b. Changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and,
- c. Physical changes to the emissions unit or its exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

5. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"
 - a. A description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);
 - b. Documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and,
 - c. Where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify all periods of time during which the water flow rate, the pressure drop, and the pH did not comply with the allowable values specified above for this emission unit. The reports shall identify the cause(s) (if known) of the excursion, duration of the excursion, applicable operating rates during the excursion, and the corrective actions which were taken for each excursion. These reports shall be

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submitted in accordance with the General Terms and Conditions of this permit.

If an excursion did not occur during the reporting period, then a report stating that fact is required.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions were observed from the stack serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Ohio EPA, Southeast District Office by January 31 and July 31 of each year and shall cover the previous 6-month period.

E. Testing Requirements

1. a. Emission Limitation: This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

Applicable Compliance Method: Compliance shall be demonstrated based upon emissions testing in accordance with methods and procedures in section E.2.

- b. Emission Limitation: Nitrogen Oxide Compounds (NO_x) emissions shall not exceed :
 0.165 lb NO_x/ lb fine gold,
 8.8 lb NO_x / day,
 1.6 TPY

Applicable Compliance Method: Compliance shall be demonstrated using the following equation for potential to emit:

22.416 lb NO_x per batch {based on stoichiometry balanced chemical reaction data}
 12 hrs per batch, 6 hours reaction time and 6 hours boiling time
 1 batch per day

1500 troy ounces crude metal per batch
 90% scrubber control, 95% capture (based on application information)

$(61.0 \text{ lb NO}_x/\text{batch unc.}) (90\%\text{control (95\% capture)}) / (1500 \text{ troy oz crude metal (52\% gold)}) / 14.58 \text{ troy oz / lb} = 0.165 \text{ lb NO}_x/\text{lb gold}$

$0.165 \text{ lb NO}_x/\text{lb gold} (53.5 \text{ lb gold/day/batch}) = 8.8 \text{ lb NO}_x/\text{day}$

$8.8 \text{ lb NO}_x/\text{day} (365 \text{ d/yr}) (1/2000 \text{ lb / ton}) = 1.6 \text{ TPY NO}_x$

If required, the permittee shall demonstrate compliance with the lb NO_x / lb gold emission

limitation in accordance with 40 CFR Part 60, Appendix A, Method 7E. Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

- c. Emission Limitation: Hydrochloric acid (HCl) emissions shall not exceed:
 0.003 lb HCl/ lb fine gold,
 0.16 lb HCl / day,
 0.029 TPY

Applicable Compliance Method: Compliance shall be demonstrated using the following equation for potential to emit:

12 hrs per reaction (batch)
 1 batch per day
 30 gallons HCl 'lost' per batch
 1500 troy oz crude metal per batch
 90% scrubber control, 95% capture (based on application information)

$(1.1 \text{ lb HCl/batch unc.}) (90\% \text{ control } (95\% \text{ capture})) / (1500 \text{ troy oz crude metal } (52\% \text{ gold})) / 14.58 \text{ troy oz / lb} = 0.003 \text{ lb HCl/ lb gold}$

$0.003 \text{ lb HCl/lb gold } (53.5 \text{ lb gold/batch})(1 \text{ batch/day}) = 1.6 \text{ lb HCl / day}$

$1.6 \text{ lb HCl / day } (365 \text{ d/yr})(1/2000 \text{ lb/ton}) = 0.029 \text{ TPY HCl}$

If required, the permittee shall demonstrate compliance with the lb/lb gold emission limitation in accordance with 40 CFR Part 60, Appendix A, Method 26 or 26A. Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

- d. Emission Limitation: There shall be no visible emissions other than water vapor from the scrubber exhaust stack.

Applicable Compliance Method: Compliance shall be demonstrated based upon Test Method 22-like visible emission observations. (Although Test Method 22 applies to fugitive emissions units, the visible/no visible emissions observation technique of 40 CFR Part 60, Appendix A, Method 22 can be applied to ducted emissions, i.e., Test Method 22-like visible emissions observations.)

2. The permittee shall conduct, or have conducted, an initial emission test for this emissions unit within 6 months after the startup of the emission unit.

The emission testing shall be conducted to demonstrate that the 2-stage wet scrubber serving emissions units P001 - P005 and P008 - P015 is in compliance with the 90% removal efficiency limitation for nitrogen oxide compounds, sulfur dioxide and hydrochloric acid .

The following test method(s) shall be employed to demonstrate compliance with the removal efficiency requirement for the two-stage scrubber:

Methods 1-4 and 6C for SO₂,

Methods 1-4 and 7E for NO_x, and

Methods 1-4 and 26 or 26A for HCl .

Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA. (The Ohio EPA will consider the request, including an evaluation of the applicability, necessity, and validity of the alternative, and may approve the use of the alternative if such approval does not contravene any other applicable requirement.) The test method and procedures selected shall be based on a consideration of the diversity of the organic species present and their total concentration, and on a consideration of the potential presence of interfering gases.

The control efficiency (i.e., the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined by calculating the percent reduction in mass emissions between the inlet and outlet of the control system.

The test shall be conducted while the emissions unit(s) is operating at or near its maximum capacity, unless otherwise specified or approved by the Ohio EPA, Southeast District Office.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA, Southeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA, Southeast District Office's refusal to accept the results of the emission test(s).

Personnel from the Ohio EPA, Southeast District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions test(s) shall be signed by the

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person or persons responsible for the tests and submitted to the Ohio EPA, Southeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA, Southeast District Office.

F. Miscellaneous Requirements

None.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

- 1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	OAC rule 3745-17-07(A) OAC rule 3745-17-11(B)
P005 - Crude Gold Kettle 5 vented to a wet scrubber	OAC rule 3745-31-05(A)(3)	OAC rule 3745-23-06

Applicable Emissions
Limitations/Control Measures

This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

There shall be no visible emissions other than water vapor from the scrubber exhaust stack.

See A.2.b. below.

Nitrogen Oxide Compounds (NO_x) emissions shall not exceed :
0.165 lb NO_x/ lb fine gold,
8.8 lb NO_x / day,
1.6 TPY

Hydrochloric acid (HCl) emissions shall not exceed:
0.003 lb HCl/ lb fine gold,
0.16 lb HCl / day,
0.029 TPY

Use of Best Available Control Methods to minimize fugitive emissions from this emission unit.

See A.2.a. below.

Particulate emissions (PE) are not anticipated from this emission unit.

The emission limitations specified in these rules are less stringent than the emission limitations established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a** The enclosure has been designed using corrosion resistant materials with adequate containment and air flow to minimize fugitive emissions in accordance with good engineering practices. These enclosures are necessary for employee safety. Therefore no recordkeeping or reporting is necessary to ensure proper operation.
- 2.b** The no visible emission limit pertains to NO_x and acid emissions. Visible emissions evaluations are based on color, rather than opacity.

B. Operational Restrictions

1. The permittee shall maintain the water flow rate, pressure drop and the pH range for the scrubber at the following levels while the emission unit is in operation:
 - a. a flow rate of not less than 396 gallons per minute (@ 9000 cfm inlet gas flow) in stage-1 and 702 gallons per minute (@ 9000 cfm inlet gas flow) in stage-2.
 - b. a pressure drop range of 6.0 to 8.5 inches of water.
 - c. a pH range of 5.5 to 7.5 in stage-1 and 6.0 to 9.5 in stage-2.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall properly install, operate and maintain equipment to continuously monitor and record on a continuous chart recorder the pH while the emission unit is in operation. The flow rate and the pressure drop in stage-1 and in stage-2 of the scrubber shall also be monitored while the emission unit is in operation. The monitoring equipment shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
2. The permittee shall collect and record the following information :
 - a. The pH of the scrubber in stage-1 and in stage-2 (the continuous chart recorder will meet this requirement).
 - b. The flow rate (in gpm) in the scrubber stage-1 and stage-2, on a daily basis at a minimum.
 - c. The pressure drop (in inches of water) of the scrubber (stage-1 and stage-2) on a daily basis at a minimum.

- d. A log or record of the downtime for the collection system, control device, monitoring equipment, and the associated emission unit(s) which were operating during the downtime period.
3. The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions (except water vapor) from the stack serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. the total duration of any visible emission incident; and
 - c. any corrective actions taken to eliminate the visible emissions.
 4. The permit to install for emissions units, P001 - P005 and P008 - P015 was evaluated based on the maximum total materials and the design parameters of the emissions unit's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

Pollutant: hydrochloric acid

TLV (mg/m³): 7.5 mg/m³

Maximum Hourly Emission Rate (lbs/hr): 2.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level

Concentration (ug/m³): 71.53 ug/m³

MAGLC (ug/m³): 179 ug/m³

Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will

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not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the "Air Toxic Policy" include the following:

- a. Changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;
- b. Changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and,
- c. Physical changes to the emissions unit or its exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

5. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy":
 - a. A description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);
 - b. Documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and,
 - c. Where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify all periods of time during which the water flow rate, the pressure drop, and the pH did not comply with the allowable values specified above for this emission unit. The reports shall identify the cause(s) (if known) of the excursion, duration of the excursion, applicable operating rates during the

excursion, and the corrective actions which were taken for each excursion. These reports shall be submitted in accordance with the General Terms and Conditions of this permit.

If an excursion did not occur during the reporting period, then a report stating that fact is required.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions were observed from the stack serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Ohio EPA, Southeast District Office by January 31 and July 31 of each year and shall cover the previous 6-month period.

E. Testing Requirements

1. a. Emission Limitation: This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

Applicable Compliance Method: Compliance shall be demonstrated based upon emissions testing in accordance with methods and procedures in section E.2.

- b. Emission Limitation: Nitrogen Oxide Compounds (NO_x) emissions shall not exceed :
 0.165 lb NO_x/ lb fine gold,
 8.8 lb NO_x / day,
 1.6 TPY

Applicable Compliance Method: Compliance shall be demonstrated using the following equation for potential to emit:

22.416 lb NO_x per batch {based on stoichiometry balanced chemical reaction data}
 12 hrs per batch, 6 hours reaction time and 6 hours boiling time
 1 batch per day
 1500 troy ounces crude metal per batch
 90% scrubber control, 95% capture (based on application information)

$(61.0 \text{ lb NO}_x/\text{batch unc.}) (90\%\text{control (95\% capture)}) / (1500 \text{ troy oz crude metal (52\% gold)}) / 14.58 \text{ troy oz / lb} = 0.165 \text{ lb NO}_x/\text{lb gold}$

$0.165 \text{ lb NO}_x/\text{lb gold} (53.5 \text{ lb gold/day/batch}) = 8.8 \text{ lb NO}_x/\text{day}$

$8.8 \text{ lb NO}_x/\text{day} (365 \text{ d/yr}) (1/2000 \text{ lb / ton}) = 1.6 \text{ TPY NO}_x$

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If required, the permittee shall demonstrate compliance with the lb NO_x / lb gold emission limitation in accordance with 40 CFR Part 60, Appendix A, Method 7E. Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

- c. Emission Limitation: Hydrochloric acid (HCl) emissions shall not exceed:
0.003 lb HCl/ lb fine gold,
0.16 lb HCl / day,
0.029 TPY

Applicable Compliance Method: Compliance shall be demonstrated using the following equation for potential to emit:

12 hrs per reaction (batch)
1 batch per day
30 gallons HCl 'lost' per batch
1500 troy oz crude metal per batch
90% scrubber control, 95% capture (based on application information)

$(1.1 \text{ lb HCl/batch unc.}) (1 - (90\% \text{ control } (95\% \text{ capture}))) / (1500 \text{ troy oz crude metal } (52\% \text{ gold})) / 14.58 \text{ troy oz / lb} = 0.003 \text{ lb HCl/ lb gold}$

$0.003 \text{ lb HCl/lb gold } (53.5 \text{ lb gold/batch})(1 \text{ batch/day}) = 0.16 \text{ lb HCl / day}$

$0.16 \text{ lb HCl / day } (365 \text{ d/yr})(1/2000 \text{ lb/ton}) = 0.029 \text{ TPY HCl}$

If required, the permittee shall demonstrate compliance with the lb/lb gold emission limitation in accordance with 40 CFR Part 60, Appendix A, Method 26 or 26A. Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

- d. Emission Limitation: There shall be no visible emissions other than water vapor from the scrubber exhaust stack.

Applicable Compliance Method: Compliance shall be demonstrated based upon Test Method 22-like visible emission observations. (Although Test Method 22 applies to fugitive emissions units, the visible/no visible emissions observation technique of 40 CFR Part 60, Appendix A, Method 22 can be applied to ducted emissions, i.e., Test Method 22-like visible emissions observations.)

2. The permittee shall conduct, or have conducted, an initial emission test for this emissions unit within 6 months after the startup of the emission unit.

The emission testing shall be conducted to demonstrate that the 2-stage wet scrubber serving emissions units P001 - P005 and P008 - P015 is in compliance with the 90% removal efficiency limitation for nitrogen oxide compounds, sulfur dioxide and hydrochloric acid .

The following test method(s) shall be employed to demonstrate compliance with the removal efficiency requirement for the two-stage scrubber:

Methods 1-4 and 6C for SO₂,

Methods 1-4 and 7E for NO_x, and

Methods 1-4 and 26 or 26A for HCl .

Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA. (The Ohio EPA will consider the request, including an evaluation of the applicability, necessity, and validity of the alternative, and may approve the use of the alternative if such approval does not contravene any other applicable requirement.) The test method and procedures selected shall be based on a consideration of the diversity of the organic species present and their total concentration, and on a consideration of the potential presence of interfering gases.

The control efficiency (i.e., the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined by calculating the percent reduction in mass emissions between the inlet and outlet of the control system.

The test shall be conducted while the emissions unit(s) is operating at or near its maximum capacity, unless otherwise specified or approved by the Ohio EPA, Southeast District Office.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA, Southeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA, Southeast District Office's refusal to accept the results of the emission test(s).

Personnel from the Ohio EPA, Southeast District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA, Southeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio

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EPA, Southeast District Office.

F. Miscellaneous Requirements

None.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

- 1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>
P008 - SO2 Kettle 1 vented to a wet scrubber	OAC rule 3745-31-05(A)(3)
	OAC rule 3745-17-07(A) OAC rule 3745-17-11(B)
	OAC rule 3745-18-06

Applicable Emissions
Limitations/Control Measures

This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

There shall be no visible emissions other than water vapor from the scrubber exhaust stack.

See A.2.b. below.

Sulfur dioxide (SO₂) emissions

shall not exceed:

0.0143 lb SO₂ / lb fine gold,

1.37 lb SO₂ / day,

0.25 TPY

Use of Best Available Control Methods to minimize fugitive emissions from this emission unit.

See A.2.a. below.

Particulate emissions (PE) are not anticipated from this emission unit.

The emission limitations specified in these rules are less stringent than the emission limitations established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a** The enclosure has been designed using corrosion resistant materials with adequate containment and air flow to minimize fugitive emissions in accordance with good

engineering practices. These enclosures are necessary for employee safety. Therefore no recordkeeping or reporting is necessary to ensure proper operation.

- 2.b** The no visible emission limit pertains to NO_x and acid emissions. Visible emissions evaluations are based on color, rather than opacity.

B. Operational Restrictions

1. The permittee shall maintain the water flow rate, pressure drop and the pH range for the scrubber at the following levels while the emission unit is in operation:
 - a. a flow rate of not less than 396 gallons per minute (@ 9000 cfm inlet gas flow) in stage-1 and 702 gallons per minute (@ 9000 cfm inlet gas flow) in stage-2.
 - b. a pressure drop range of 6.0 to 8.5 inches of water.
 - c. a pH range of 5.5 to 7.5 in stage-1 and 6.0 to 9.5 in stage-2.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall properly install, operate and maintain equipment to continuously monitor and record on a continuous chart recorder the pH while the emission unit is in operation. The flow rate and the pressure drop in stage-1 and in stage-2 of the scrubber shall also be monitored while the emission unit is in operation. The monitoring equipment shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
2. The permittee shall collect and record the following information :
 - a. The pH of the scrubber in stage-1 and in stage-2 (the continuous chart recorder will meet this requirement).
 - b. The flow rate (in gpm) in the scrubber stage-1 and stage-2, on a daily basis at a minimum.
 - c. The pressure drop (in inches of water) of the scrubber (stage-1 and stage-2) on a daily basis at a minimum.
 - d. A log or record of the downtime for the collection system, control device, monitoring equipment, and the associated emission unit(s) which were operating during the downtime period.

3. The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions (except water vapor) from the stack serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. the total duration of any visible emission incident; and
 - c. any corrective actions taken to eliminate the visible emissions.

4. The permit to install for emissions units, P001 - P005 and P008 - P015 was evaluated based on the maximum total materials and the design parameters of the emissions unit's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

Pollutant: hydrochloric acid

TLV (mg/m³): 7.5 mg/m³

Maximum Hourly Emission Rate (lbs/hr): 2.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level
Concentration (ug/m³): 71.53 ug/m³

MAGLC (ug/m³): 179 ug/m³

Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the "Air Toxic Policy" include the following:

- a. Changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound

with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;

- b. Changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and,
- c. Physical changes to the emissions unit or its exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

5. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"
 - a. A description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);
 - b. Documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and,
 - c. Where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify all periods of time during which the water flow rate, the pressure drop, and the pH did not comply with the allowable values specified above for this emission unit. The reports shall identify the cause(s) (if known) of the excursion, duration of the excursion, applicable operating rates during the excursion, and the corrective actions which were taken for each excursion. These reports shall be submitted in accordance with the General Terms and Conditions of this permit.

If an excursion did not occur during the reporting period, then a report stating that fact is

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Facility ID: 0640010105

Emissions Unit ID: P008

required.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions were observed from the stack serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Ohio EPA, Southeast District Office by January 31 and July 31 of each year and shall cover the previous 6-month period.

E. Testing Requirements

1. a. Emission Limitation: This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

Applicable Compliance Method: Compliance shall be demonstrated based upon emissions testing in accordance with methods and procedures in section E.2.

- b. Emission Limitation: Sulfur dioxide (SO₂) emissions shall not exceed:
0.0143 lb SO₂ / lb fine gold,
1.37 lb SO₂ / day,
0.25 TPY

Applicable Compliance Method: Compliance shall be demonstrated using the following equation for potential to emit:

9.472 lb xs SO₂ /batch {based on stoichiometry balanced chemical reaction data}
4 hrs per batch
1 batch per day
1400 troy oz / 14.583 troy oz/lb = 96 lb gold per batch
90% scrubber control, 95% capture (based on application information)

$9.472 \text{ lb xs SO}_2 / \text{batch} (1/96 \text{ lb/batch})(1 \text{ batch/day})(90\% \text{ control } (95\% \text{ capture})) = 0.0143 \text{ lb SO}_2 / \text{lb fine gold}$

$0.0143 \text{ lb SO}_2 / \text{lb gold} (96 \text{ lb gold} / \text{day}) = 1.37 \text{ lb SO}_2 / \text{day}$

$1.37 \text{ lb SO}_2 / \text{day} (365 \text{ d/yr}) (1/2000 \text{ lb/ton}) = 0.25 \text{ TPY SO}_2$

If required, the permittee shall demonstrate compliance with the lb/lb gold emission limitation in accordance with 40 CFR Part 60, Appendix A, Method 6C. Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

- c. Emission Limitation: There shall be no visible emissions other than water vapor from the scrubber exhaust stack.

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Applicable Compliance Method: Compliance shall be demonstrated based upon Test Method 22-like visible emission observations. (Although Test Method 22 applies to fugitive emissions units, the visible/no visible emissions observation technique of 40 CFR Part 60, Appendix A, Method 22 can be applied to ducted emissions, i.e., Test Method 22-like visible emissions observations.)

2. The permittee shall conduct, or have conducted, an initial emission test for this emissions unit within 6 months after the startup of the emission unit.

The emission testing shall be conducted to demonstrate that the 2-stage wet scrubber serving emissions units P001 - P005 and P008 - P015 is in compliance with the 90% removal efficiency limitation for nitrogen oxide compounds, sulfur dioxide and hydrochloric acid .

The following test method(s) shall be employed to demonstrate compliance with the removal efficiency requirement for the two-stage scrubber:

Methods 1-4 and 6C for SO₂,

Methods 1-4 and 7E for NO_x, and

Methods 1-4 and 26 or 26A for HCl .

Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA. (The Ohio EPA will consider the request, including an evaluation of the applicability, necessity, and validity of the alternative, and may approve the use of the alternative if such approval does not contravene any other applicable requirement.) The test method and procedures selected shall be based on a consideration of the diversity of the organic species present and their total concentration, and on a consideration of the potential presence of interfering gases.

The control efficiency (i.e., the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined by calculating the percent reduction in mass emissions between the inlet and outlet of the control system.

The test shall be conducted while the emissions unit(s) is operating at or near its maximum capacity, unless otherwise specified or approved by the Ohio EPA, Southeast District Office.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA, Southeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA, Southeast District Office's refusal to accept the results of the emission test(s).

Personnel from the Ohio EPA, Southeast District Office shall be permitted to witness the test(s),

examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA, Southeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA, Southeast District Office.

F. Miscellaneous Requirements

None.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>
P009 - SO2 Kettle 2 vented to a wet scrubber	OAC rule 3745-31-05(A)(3)
	OAC rule 3745-17-07(A) OAC rule 3745-17-11(B)
	OAC rule 3745-18-06

Applicable Emissions
Limitations/Control Measures

This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

There shall be no visible emissions other than water vapor from the scrubber exhaust stack.

See A.2.b. below.

Sulfur dioxide (SO₂) emissions shall not exceed:

0.0143 lb SO₂ / lb fine gold,

1.37 lb SO₂ / day,

0.25 TPY

Use of Best Available Control Methods to minimize fugitive emissions from this emission unit.

See A.2.a. below.

Particulate emissions (PE) are not anticipated from this emission unit.

The emission limitations specified in these rules are less stringent than the emission limitations established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a** The enclosure has been designed using corrosion resistant materials with adequate containment and air flow to minimize fugitive emissions in accordance with good engineering practices. These enclosures are necessary for employee safety. Therefore no recordkeeping or reporting is necessary to ensure proper operation.

- 2.b** The no visible emission limit pertains to NO_x and acid emissions. Visible emissions evaluations are based on color, rather than opacity.

B. Operational Restrictions

1. The permittee shall maintain the water flow rate, pressure drop and the pH range for the scrubber at the following levels while the emission unit is in operation:
 - a. a flow rate of not less than 396 gallons per minute (@ 9000 cfm inlet gas flow) in stage-1 and 702 gallons per minute (@ 9000 cfm inlet gas flow) in stage-2.
 - b. a pressure drop range of 6.0 to 8.5 inches of water.
 - c. a pH range of 5.5 to 7.5 in stage-1 and 6.0 to 9.5 in stage-2.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall properly install, operate and maintain equipment to continuously monitor and record on a continuous chart recorder the pH while the emission unit is in operation. The flow rate and the pressure drop in stage-1 and in stage-2 of the scrubber shall also be monitored while the emission unit is in operation. The monitoring equipment shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
2. The permittee shall collect and record the following information :
 - a. The pH of the scrubber in stage-1 and in stage-2 (the continuous chart recorder will meet this requirement).
 - b. The flow rate (in gpm) in the scrubber stage-1 and stage-2, on a daily basis at a minimum.
 - c. The pressure drop (in inches of water) of the scrubber (stage-1 and stage-2) on a daily basis at a minimum.
 - d. A log or record of the downtime for the collection system, control device, monitoring equipment, and the associated emission unit(s) which were operating during the downtime period.
3. The permittee shall perform daily checks, when the emissions unit is in operation and when the

weather conditions allow, for any visible emissions (except water vapor) from the stack serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

- a. the color of the emissions;
 - b. the total duration of any visible emission incident; and
 - c. any corrective actions taken to eliminate the visible emissions.
4. The permit to install for emissions units, P001 - P005 and P008 - P015 was evaluated based on the maximum total materials and the design parameters of the emissions unit's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

Pollutant: hydrochloric acid

TLV (mg/m^3): $7.5 \text{ mg}/\text{m}^3$

Maximum Hourly Emission Rate (lbs/hr): 2.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level
Concentration (ug/m^3): $71.53 \text{ ug}/\text{m}^3$

MAGLC (ug/m^3): $179 \text{ ug}/\text{m}^3$

Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the "Air Toxic Policy" include the following:

- a. Changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the

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handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;

- b. Changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and,
- c. Physical changes to the emissions unit or its exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

5. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy":
 - a. A description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);
 - b. Documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and,
 - c. Where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify all periods of time during which the water flow rate, the pressure drop, and the pH did not comply with the allowable values specified above for this emission unit. The reports shall identify the cause(s) (if known) of the excursion, duration of the excursion, applicable operating rates during the excursion, and the corrective actions which were taken for each excursion. These reports shall be submitted in accordance with the General Terms and Conditions of this permit.

If an excursion did not occur during the reporting period, then a report stating that fact is required.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions were observed from the stack serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Ohio EPA, Southeast District Office by January 31 and July 31 of each year and shall cover the previous 6-month period.

E. Testing Requirements

1. a. Emission Limitation: This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

Applicable Compliance Method: Compliance shall be demonstrated based upon emissions testing in accordance with methods and procedures in section E.2.

- b. Emission Limitation: Sulfur dioxide (SO₂) emissions shall not exceed:
0.0143 lb SO₂ / lb fine gold,
1.37 lb SO₂ / day,
0.25 TPY

Applicable Compliance Method: Compliance shall be demonstrated using the following equation for potential to emit:

9.472 lb xs SO₂ /batch {based on stoichiometry balanced chemical reaction data}
4 hrs per batch
1 batch per day
1400 troy oz / 14.583 troy oz/lb = 96 lb gold per batch
90% scrubber control, 95% capture (based on application information)

$9.472 \text{ lb xs SO}_2 / \text{batch} (1/96 \text{ lb/batch})(1 \text{ batch/day})(90\% \text{ control } (95\% \text{ capture})) = 0.0143 \text{ lb SO}_2 / \text{lb fine gold}$

$0.0143 \text{ lb SO}_2 / \text{lb gold} (96 \text{ lb gold} / \text{day}) = 1.37 \text{ lb SO}_2 / \text{day}$

$1.37 \text{ lb SO}_2 / \text{day} (365 \text{ d/yr}) (1/2000 \text{ lb/ton}) = 0.25 \text{ TPY SO}_2$

If required, the permittee shall demonstrate compliance with the lb/lb gold emission limitation in accordance with 40 CFR Part 60, Appendix A, Method 6C. Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

- c. Emission Limitation: There shall be no visible emissions other than water vapor from the scrubber exhaust stack.

Applicable Compliance Method: Compliance shall be demonstrated based upon Test

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Method 22-like visible emission observations. (Although Test Method 22 applies to fugitive emissions units, the visible/no visible emissions observation technique of 40 CFR Part 60, Appendix A, Method 22 can be applied to ducted emissions, i.e., Test Method 22-like visible emissions observations.)

2. The permittee shall conduct, or have conducted, an initial emission test for this emissions unit within 6 months after the startup of the emission unit.

The emission testing shall be conducted to demonstrate that the 2-stage wet scrubber serving emissions units P001 - P005 and P008 - P015 is in compliance with the 90% removal efficiency limitation for nitrogen oxide compounds, sulfur dioxide and hydrochloric acid .

The following test method(s) shall be employed to demonstrate compliance with the removal efficiency requirement for the two-stage scrubber:

Methods 1-4 and 6C for SO₂,

Methods 1-4 and 7E for NO_x, and

Methods 1-4 and 26 or 26A for HCl .

Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA. (The Ohio EPA will consider the request, including an evaluation of the applicability, necessity, and validity of the alternative, and may approve the use of the alternative if such approval does not contravene any other applicable requirement.) The test method and procedures selected shall be based on a consideration of the diversity of the organic species present and their total concentration, and on a consideration of the potential presence of interfering gases.

The control efficiency (i.e., the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined by calculating the percent reduction in mass emissions between the inlet and outlet of the control system.

The test shall be conducted while the emissions unit(s) is operating at or near its maximum capacity, unless otherwise specified or approved by the Ohio EPA, Southeast District Office.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA, Southeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA, Southeast District Office's refusal to accept the results of the emission test(s).

Personnel from the Ohio EPA, Southeast District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the

operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA, Southeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA, Southeast District Office.

F. Miscellaneous Requirements

None.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

- The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	OAC rule 3745-17-07(A) OAC rule 3745-17-11(B)
P010 - Strip Lot Kettle 1 vented to a wet scrubber	OAC rule 3745-31-05(A)(3)	OAC rule 3745-23-06

3745-31-05(A)(3).

Applicable Emissions
Limitations/Control Measures

This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

There shall be no visible emissions other than water vapor from the scrubber exhaust stack.

See A.2.b. below.

Nitrogen Oxide Compounds (NO_x) emissions shall not exceed :
0.083 lb NO_x/ lb fine gold,
0.6 lb NO_x / day,
0.1 TPY

Hydrochloric acid (HCl) emissions shall not exceed:

0.016 lb HCl/ lb fine gold,
0.115 lb HCl / day,
0.021 TPY

Use of Best Available Control Methods to minimize fugitive emissions from this emission unit.

See A.2.a. below.

Particulate emissions (PE) are not anticipated from this emission unit.

The emission limitations specified in these rules are less stringent than the emission limitations established pursuant to OAC rule

2. Additional Terms and Conditions

- 2.a** The enclosure has been designed using corrosion resistant materials with adequate containment and air flow to minimize fugitive emissions in accordance with good engineering practices. These enclosures are necessary for employee safety. Therefore no recordkeeping or reporting is necessary to ensure proper operation.
- 2.b** The no visible emission limit pertains to NO_x and acid emissions. Visible emissions evaluations are based on color, rather than opacity.

B. Operational Restrictions

1. The permittee shall maintain the water flow rate, pressure drop and the pH range for the scrubber at the following levels while the emission unit is in operation:
- a. a flow rate of not less than 396 gallons per minute (@ 9000 cfm inlet gas flow) in stage-1 and 702 gallons per minute (@ 9000 cfm inlet gas flow) in stage-2.
 - b. a pressure drop range of 6.0 to 8.5 inches of water.
 - c. a pH range of 5.5 to 7.5 in stage-1 and 6.0 to 9.5 in stage-2.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall properly install, operate and maintain equipment to continuously monitor and record on a continuous chart recorder the pH while the emission unit is in operation. The flow rate and the pressure drop in stage-1 and in stage-2 of the scrubber shall also be monitored while the emission unit is in operation. The monitoring equipment shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
2. The permittee shall collect and record the following information :
- a. The pH of the scrubber in stage-1 and in stage-2 (the continuous chart recorder will meet this requirement).
 - b. The flow rate (in gpm) in the scrubber stage-1 and stage-2, on a daily basis at a minimum.
 - c. The pressure drop (in inches of water) of the scrubber (stage-1 and stage-2) on a daily basis at a minimum.

- d. A log or record of the downtime for the collection system, control device, monitoring equipment, and the associated emission unit(s) which were operating during the downtime period.
3. The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions (except water vapor) from the stack serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. the total duration of any visible emission incident; and
 - c. any corrective actions taken to eliminate the visible emissions.
 4. The permit to install for emissions units, P001 - P005 and P008 - P015 was evaluated based on the maximum total materials and the design parameters of the emissions unit's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

Pollutant: hydrochloric acid

TLV (mg/m³): 7.5 mg/m³

Maximum Hourly Emission Rate (lbs/hr): 2.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level

Concentration (ug/m³): 71.53 ug/m³

MAGLC (ug/m³): 179 ug/m³

Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will

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not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the "Air Toxic Policy" include the following:

- a. Changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;
- b. Changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and,
- c. Physical changes to the emissions unit or its exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

5. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy":
 - a. A description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);
 - b. Documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and,
 - c. Where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify all periods of time during which the water flow rate, the pressure drop, and the pH did not comply with the allowable values specified above for this emission unit. The reports shall identify the cause(s) (if known) of the excursion, duration of the excursion, applicable operating rates during the

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excursion, and the corrective actions which were taken for each excursion. These reports shall be submitted in accordance with the General Terms and Conditions of this permit.

If an excursion did not occur during the reporting period, then a report stating that fact is required.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions were observed from the stack serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Ohio EPA, Southeast District Office by January 31 and July 31 of each year and shall cover the previous 6-month period.

E. Testing Requirements

1. a. Emission Limitation: This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

Applicable Compliance Method: Compliance shall be demonstrated based upon emissions testing in accordance with methods and procedures in section E.2.

- b. Emission Limitation: Nitrogen Oxide Compounds (NO_x) emissions shall not exceed :
 0.083 lb NO_x/ lb fine gold,
 0.6 lb NO_x / day,
 0.1 TPY

Applicable Compliance Method: Compliance shall be demonstrated using the following equation for potential to emit:

4.1 lb NO_x per batch {based on stoichiometry balanced chemical reaction data}
 48 hrs per batch
 0.5 batch per day
 200 troy ounces crude metal per batch
 90% scrubber control, 95% capture (based on application information)

$(4.1 \text{ lb NO}_x/\text{batch unc.}) (90\%\text{control (95\% capture)}) / (200 \text{ troy oz crude metal (52\% gold)}) / 14.58 \text{ troy oz / lb} = 0.083 \text{ lb NO}_x/\text{ lb gold}$

$0.083 \text{ lb NO}_x/\text{ lb gold} (7.13 \text{ lb gold/day/batch}) = 0.6 \text{ lb NO}_x/\text{day}$

$0.6 \text{ lb NO}_x/\text{day} (365 \text{ d/yr}) (1/2000 \text{ lb / ton}) = 0.1 \text{ TPY NO}_x$

If required, the permittee shall demonstrate compliance with the lb NO_x / lb gold emission limitation in accordance with 40 CFR Part 60, Appendix A, Method 7E. Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

- c. Emission Limitation: Hydrochloric acid (HCl) emissions shall not exceed:
0.016 lb HCl/ lb fine gold,
0.115 lb HCl / day,
0.021 TPY

Applicable Compliance Method: Compliance shall be demonstrated using the following equation for potential to emit:

48 hrs per reaction (batch)
0.5 batch per day
7.23 gallons HCl in solution per batch
200 troy oz crude metal per batch
90% scrubber control, 95% capture (based on application information)

$(0.79 \text{ lb HCl/day unc.}) (90\% \text{ control } (95\% \text{ capture})) / (200 \text{ troy oz crude metal } (52\% \text{ gold})) / 14.58 \text{ troy oz / lb} = 0.016 \text{ lb HCl/ lb gold}$

$0.016 \text{ lb HCl/lb gold } (7.13 \text{ lb gold/batch/day}) = 0.115 \text{ lb HCl/ day}$

$0.115 \text{ lb HCl/ day } (365 \text{ d/yr}) / (2000 \text{ lb/ton}) = 0.021 \text{ TPY HCl}$

If required, the permittee shall demonstrate compliance with the lb/lb gold emission limitation in accordance with 40 CFR Part 60, Appendix A, Method 26 or 26A. Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

- d. Emission Limitation: There shall be no visible emissions other than water vapor from the scrubber exhaust stack.

Applicable Compliance Method: Compliance shall be demonstrated based upon Test Method 22-like visible emission observations. (Although Test Method 22 applies to fugitive emissions units, the visible/no visible emissions observation technique of 40 CFR Part 60, Appendix A, Method 22 can be applied to ducted emissions, i.e., Test Method

22-like visible emissions observations.)

2. The permittee shall conduct, or have conducted, an initial emission test for this emissions unit within 6 months after the startup of the emission unit.

The emission testing shall be conducted to demonstrate that the 2-stage wet scrubber serving emissions units P001 - P005 and P008 - P015 is in compliance with the 90% removal efficiency limitation for nitrogen oxide compounds, sulfur dioxide and hydrochloric acid .

The following test method(s) shall be employed to demonstrate compliance with the removal efficiency requirement for the two-stage scrubber:

Methods 1-4 and 6C for SO₂,

Methods 1-4 and 7E for NO_x, and

Methods 1-4 and 26 or 26A for HCl .

Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA. (The Ohio EPA will consider the request, including an evaluation of the applicability, necessity, and validity of the alternative, and may approve the use of the alternative if such approval does not contravene any other applicable requirement.) The test method and procedures selected shall be based on a consideration of the diversity of the organic species present and their total concentration, and on a consideration of the potential presence of interfering gases.

The control efficiency (i.e., the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined by calculating the percent reduction in mass emissions between the inlet and outlet of the control system.

The test shall be conducted while the emissions unit(s) is operating at or near its maximum capacity, unless otherwise specified or approved by the Ohio EPA, Southeast District Office.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA, Southeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA, Southeast District Office's refusal to accept the results of the emission test(s).

Personnel from the Ohio EPA, Southeast District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

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A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA, Southeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA, Southeast District Office.

F. Miscellaneous Requirements

None.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	OAC rule 3745-17-07(A) OAC rule 3745-17-11(B)
P011 - Strip Lot Kettle 2 vented to a wet scrubber	OAC rule 3745-31-05(A)(3)	OAC rule 3745-23-06

Ohio 1**PTI A****Issued: 4/29/2004**Emissions Unit ID: **P011**

Applicable Emissions
Limitations/Control Measures

pursuant to OAC rule
 3745-31-05(A)(3).

This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

There shall be no visible emissions other than water vapor from the scrubber exhaust stack.
 See A.2.b. below.

Nitrogen Oxide Compounds (NO_x) emissions shall not exceed :
 0.083 lb NO_x/ lb fine gold,
 0.6 lb NO_x / day,
 0.1 TPY

Hydrochloric acid (HCl) emissions shall not exceed:
 0.016 lb HCl/ lb fine gold,
 0.115 lb HCl / day,
 0.021 TPY

Use of Best Available Control Methods to minimize fugitive emissions from this emission unit.
 See A.2.a. below.

Particulate emissions (PE) are not anticipated from this emission unit.

The emission limitations specified in these rules are less stringent than the emission limitations established

2. Additional Terms and Conditions

- 2.a** The enclosure has been designed using corrosion resistant materials with adequate containment and air flow to minimize fugitive emissions in accordance with good engineering practices. These enclosures are necessary for employee safety. Therefore no recordkeeping or reporting is necessary to ensure proper operation.
- 2.b** The no visible emission limit pertains to NO_x and acid emissions. Visible emissions evaluations are based on color, rather than opacity.

B. Operational Restrictions

1. The permittee shall maintain the water flow rate, pressure drop and the pH range for the scrubber at the following levels while the emission unit is in operation:
 - a. a flow rate of not less than 396 gallons per minute (@ 9000 cfm inlet gas flow) in stage-1 and 702 gallons per minute (@ 9000 cfm inlet gas flow) in stage-2.
 - b. a pressure drop range of 6.0 to 8.5 inches of water.
 - c. a pH range of 5.5 to 7.5 in stage-1 and 6.0 to 9.5 in stage-2.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall properly install, operate and maintain equipment to continuously monitor and record on a continuous chart recorder the pH while the emission unit is in operation. The flow rate and the pressure drop in stage-1 and in stage-2 of the scrubber shall also be monitored while the emission unit is in operation. The monitoring equipment shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
2. The permittee shall collect and record the following information :
 - a. The pH of the scrubber in stage-1 and in stage-2 (the continuous chart recorder will meet this requirement).
 - b. The flow rate (in gpm) in the scrubber stage-1 and stage-2, on a daily basis at a minimum.
 - c. The pressure drop (in inches of water) of the scrubber (stage-1 and stage-2) on a daily basis at a minimum.

- d. A log or record of the downtime for the collection system, control device, monitoring equipment, and the associated emission unit(s) which were operating during the downtime period.
3. The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions (except water vapor) from the stack serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. the total duration of any visible emission incident; and
 - c. any corrective actions taken to eliminate the visible emissions.
 4. The permit to install for emissions units, P001 - P005 and P008 - P015 was evaluated based on the maximum total materials and the design parameters of the emissions unit's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

Pollutant: hydrochloric acid

TLV (mg/m³): 7.5 mg/m³

Maximum Hourly Emission Rate (lbs/hr): 2.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level
Concentration (ug/m³): 71.53 ug/m³

MAGLC (ug/m³): 179 ug/m³

Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters

used in applying the "Air Toxic Policy" include the following:

- a. Changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;
- b. Changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and,
- c. Physical changes to the emissions unit or its exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

5. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"
 - a. A description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);
 - b. Documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and,
 - c. Where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify all periods of time during which the water flow rate, the pressure drop, and the pH did not comply with the allowable values specified above for this emission unit. The reports shall identify the cause(s) (if known) of the excursion, duration of the excursion, applicable operating rates during the excursion, and the corrective actions which were taken for each excursion. These reports shall be

submitted in accordance with the General Terms and Conditions of this permit.

If an excursion did not occur during the reporting period, then a report stating that fact is required.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions were observed from the stack serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Ohio EPA, Southeast District Office by January 31 and July 31 of each year and shall cover the previous 6-month period.

E. Testing Requirements

1. a. Emission Limitation: This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

Applicable Compliance Method: Compliance shall be demonstrated based upon emissions testing in accordance with methods and procedures in section E.2.

- b. Emission Limitation: Nitrogen Oxide Compounds (NO_x) emissions shall not exceed :
 0.083 lb NO_x/ lb fine gold,
 0.6 lb NO_x / day,
 0.1 TPY

Applicable Compliance Method: Compliance shall be demonstrated using the following equation for potential to emit:

4.1 lb NO_x per batch {based on stoichiometry balanced chemical reaction data}
 48 hrs per batch
 0.5 batch per day
 200 troy ounces crude metal per batch
 90% scrubber control, 95% capture (based on application information)

$(4.1 \text{ lb NO}_x/\text{batch unc.}) (90\%\text{control (95\% capture)}) / (200 \text{ troy oz crude metal (52\% gold)}) / 14.58 \text{ troy oz / lb} = 0.083 \text{ lb NO}_x/\text{ lb gold}$

$0.083 \text{ lb NO}_x/\text{ lb gold} (7.13 \text{ lb gold/day/batch}) = 0.6 \text{ lb NO}_x/\text{day}$

$0.6 \text{ lb NO}_x/\text{day} (365 \text{ d/yr}) (1/2000 \text{ lb / ton}) = 0.1 \text{ TPY NO}_x$

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If required, the permittee shall demonstrate compliance with the lb NO_x / lb gold emission limitation in accordance with 40 CFR Part 60, Appendix A, Method 7E. Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

- c. Emission Limitation: Hydrochloric acid (HCl) emissions shall not exceed:
 0.016 lb HCl/ lb fine gold,
 0.115 lb HCl / day,
 0.021 TPY

Applicable Compliance Method: Compliance shall be demonstrated using the following equation for potential to emit:

48 hrs per reaction (batch)
 0.5 batch per day
 7.23 gallons HCl in solution per batch
 200 troy oz crude metal per batch
 90% scrubber control, 95% capture (based on application information)

$(0.79 \text{ lb HCl/day unc.}) (90\% \text{ control } (95\% \text{ capture})) / (200 \text{ troy oz crude metal } (52\% \text{ gold})) / 14.58 \text{ troy oz / lb} = 0.016 \text{ lb HCl/ lb gold}$

$0.016 \text{ lb HCl/lb gold } (7.13 \text{ lb gold/batch/day}) = 0.115 \text{ lb HCl / day}$

$0.115 \text{ lb HCl / day } (365 \text{ d/yr}) / (2000 \text{ lb/ton}) = 0.021 \text{ TPY HCl}$

If required, the permittee shall demonstrate compliance with the lb/lb gold emission limitation in accordance with 40 CFR Part 60, Appendix A, Method 26 or 26A. Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

- d. Emission Limitation: There shall be no visible emissions other than water vapor from the scrubber exhaust stack.

Applicable Compliance Method: Compliance shall be demonstrated based upon Test Method 22-like visible emission observations. (Although Test Method 22 applies to fugitive emissions units, the visible/no visible emissions observation technique of 40 CFR Part 60, Appendix A, Method 22 can be applied to ducted emissions, i.e., Test Method 22-like visible emissions observations.)

2. The permittee shall conduct, or have conducted, an initial emission test for this emissions unit within 6 months after the startup of the emission unit.

The emission testing shall be conducted to demonstrate that the 2-stage wet scrubber serving emissions units P001 - P005 and P008 - P015 is in compliance with the 90% removal efficiency limitation for nitrogen oxide compounds, sulfur dioxide and hydrochloric acid .

The following test method(s) shall be employed to demonstrate compliance with the removal efficiency requirement for the two-stage scrubber:

Methods 1-4 and 6C for SO₂,

Methods 1-4 and 7E for NO_x, and

Methods 1-4 and 26 or 26A for HCl .

Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA. (The Ohio EPA will consider the request, including an evaluation of the applicability, necessity, and validity of the alternative, and may approve the use of the alternative if such approval does not contravene any other applicable requirement.) The test method and procedures selected shall be based on a consideration of the diversity of the organic species present and their total concentration, and on a consideration of the potential presence of interfering gases.

The control efficiency (i.e., the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined by calculating the percent reduction in mass emissions between the inlet and outlet of the control system.

The test shall be conducted while the emissions unit(s) is operating at or near its maximum capacity, unless otherwise specified or approved by the Ohio EPA, Southeast District Office.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA, Southeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA, Southeast District Office's refusal to accept the results of the emission test(s).

Personnel from the Ohio EPA, Southeast District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

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A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA, Southeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA, Southeast District Office.

F. Miscellaneous Requirements

None.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	OAC rule 3745-17-07(A) OAC rule 3745-17-11(B)
P012 - Fine Gold Kettle 1 vented to a wet scrubber	OAC rule 3745-31-05(A)(3)	OAC rule 3745-23-06

Applicable Emissions
Limitations/Control Measures

This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

There shall be no visible emissions other than water vapor from the scrubber exhaust stack.

See A.2.b. below.

Nitrogen Oxide Compounds (NO_x) emissions shall not exceed :
0.040 lb NO_x/ lb fine gold,
3.81 lb NO_x / day,
0.70 TPY

Hydrochloric acid (HCl) emissions shall not exceed:

0.0045 lb HCl/ lb fine gold,
0.43 lb HCl / day,
0.078 TPY

Use of Best Available Control Methods to minimize fugitive emissions from this emission unit.

See A.2.a. below.

Particulate emissions (PE) are not anticipated from this emission unit.

The emission limitations specified in these rules are less stringent than the emission limitations established pursuant to OAC rule

3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a** The enclosure has been designed using corrosion resistant materials with adequate containment and air flow to minimize fugitive emissions in accordance with good engineering practices. These enclosures are necessary for employee safety. Therefore no recordkeeping or reporting is necessary to ensure proper operation.
- 2.b** The no visible emission limit pertains to NO_x and acid emissions. Visible emissions evaluations are based on color, rather than opacity.

B. Operational Restrictions

1. The permittee shall maintain the water flow rate, pressure drop and the pH range for the scrubber at the following levels while the emission unit is in operation:
 - a. a flow rate of not less than 396 gallons per minute (@ 9000 cfm inlet gas flow) in stage-1 and 702 gallons per minute (@ 9000 cfm inlet gas flow) in stage-2.
 - b. a pressure drop range of 6.0 to 8.5 inches of water.
 - c. a pH range of 5.5 to 7.5 in stage-1 and 6.0 to 9.5 in stage-2.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall properly install, operate and maintain equipment to continuously monitor and record on a continuous chart recorder the pH while the emission unit is in operation. The flow rate and the pressure drop in stage-1 and in stage-2 of the scrubber shall also be monitored while the emission unit is in operation. The monitoring equipment shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
2. The permittee shall collect and record the following information :
 - a. The pH of the scrubber in stage-1 and in stage-2 (the continuous chart recorder will meet this requirement).
 - b. The flow rate (in gpm) in the scrubber stage-1 and stage-2, on a daily basis at a minimum.
 - c. The pressure drop (in inches of water) of the scrubber (stage-1 and stage-2) on a daily basis at a minimum.

- d. A log or record of the downtime for the collection system, control device, monitoring equipment, and the associated emission unit(s) which were operating during the downtime period.
3. The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions (except water vapor) from the stack serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. the total duration of any visible emission incident; and
 - c. any corrective actions taken to eliminate the visible emissions.
4. The permit to install for emissions units, P001 - P005 and P008 - P015 was evaluated based on the maximum total materials and the design parameters of the emissions unit's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

Pollutant: hydrochloric acid

TLV (mg/m³): 7.5 mg/m³

Maximum Hourly Emission Rate (lbs/hr): 2.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level
Concentration (ug/m³): 71.53 ug/m³

MAGLC (ug/m³): 179 ug/m³

Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters

used in applying the "Air Toxic Policy" include the following:

- a. Changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;
- b. Changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and,
- c. Physical changes to the emissions unit or its exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

5. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"
 - a. A description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);
 - b. Documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and,
 - c. Where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify all periods of time during which the water flow rate, the pressure drop, and the pH did not comply with the allowable values specified above for this emission unit. The reports shall identify the cause(s) (if known) of the excursion, duration of the excursion, applicable operating rates during the

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excursion, and the corrective actions which were taken for each excursion. These reports shall be submitted in accordance with the General Terms and Conditions of this permit.

If an excursion did not occur during the reporting period, then a report stating that fact is required.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions were observed from the stack serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Ohio EPA, Southeast District Office by January 31 and July 31 of each year and shall cover the previous 6-month period.

E. Testing Requirements

1. a. Emission Limitation: This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

Applicable Compliance Method: Compliance shall be demonstrated based upon emissions testing in accordance with methods and procedures in section E.2.

- b. Emission Limitation: Nitrogen Oxide Compounds (NO_x) emissions shall not exceed :
 0.040 lb NO_x/ lb fine gold,
 3.81 lb NO_x / day,
 0.70 TPY

Applicable Compliance Method: Compliance shall be demonstrated using the following equation for potential to emit:

26.3 lb NO_x per batch {based on stoichiometry balanced chemical reaction data}
 6 hrs per batch
 1 batch per day
 1400 troy ounces crude metal per batch
 90% scrubber control, 95% capture (based on application information)

$(26.3 \text{ lb NO}_x/\text{batch unc.}) (90\%\text{control (95\% capture)}) / (1400 \text{ troy oz crude metal}) / 14.58 \text{ troy oz / lb} = 0.040 \text{ lb NO}_x/\text{ lb gold}$

$0.040 \text{ lb NO}_x/\text{ lb gold} (96 \text{ lb gold/day/batch}) = 3.81 \text{ lb NO}_x/\text{day}$

$3.81 \text{ lb NO}_x/\text{day} (365 \text{ d/yr}) (1/2000 \text{ lb / ton}) = 0.70 \text{ TPY NO}_x$

If required, the permittee shall demonstrate compliance with the lb NO_x / lb gold emission limitation in accordance with 40 CFR Part 60, Appendix A, Method 7E. Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

- c. Emission Limitation: Hydrochloric acid (HCl) emissions shall not exceed:
0.0045 lb HCl/ lb fine gold,
0.43 lb HCl / day,
0.078 TPY

Applicable Compliance Method: Compliance shall be demonstrated using the following equation for potential to emit:

6 hrs per reaction (batch)
1.0 batch per day
32.21 gallons HCl in solution per batch
1400 troy oz crude metal per batch
90% scrubber control, 95% capture (based on application information)

$(3.0 \text{ lb HCl/batch unc.}) (90\% \text{ control } (95\% \text{ capture})) / (1400 \text{ troy oz gold}) / 14.58 \text{ troy oz / lb} = 0.0045 \text{ lb HCl/ lb gold}$

$0.0045 \text{ lb HCl/lb gold } (96 \text{ lb gold/batch})(1 \text{ batch/day}) = 0.43 \text{ lb HCl / day}$

$0.43 \text{ lb HCl /day } (365 \text{ d/yr})(1/2000 \text{ lb/ton}) = 0.078 \text{ TPY HCl}$

If required, the permittee shall demonstrate compliance with the lb/lb gold emission limitation in accordance with 40 CFR Part 60, Appendix A, Method 26 or 26A. Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

- d. Emission Limitation: There shall be no visible emissions other than water vapor from the scrubber exhaust stack.

Applicable Compliance Method: Compliance shall be demonstrated based upon Test Method 22-like visible emission observations. (Although Test Method 22 applies to fugitive emissions units, the visible/no visible emissions observation technique of 40 CFR Part 60, Appendix A, Method 22 can be applied to ducted emissions, i.e., Test Method

22-like visible emissions observations.)

2. The permittee shall conduct, or have conducted, an initial emission test for this emissions unit within 6 months after the startup of the emission unit.

The emission testing shall be conducted to demonstrate that the 2-stage wet scrubber serving emissions units P001 - P005 and P008 - P015 is in compliance with the 90% removal efficiency limitation for nitrogen oxide compounds, sulfur dioxide and hydrochloric acid .

The following test method(s) shall be employed to demonstrate compliance with the removal efficiency requirement for the two-stage scrubber:

Methods 1-4 and 6C for SO₂,

Methods 1-4 and 7E for NO_x, and

Methods 1-4 and 26 or 26A for HCl .

Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA. (The Ohio EPA will consider the request, including an evaluation of the applicability, necessity, and validity of the alternative, and may approve the use of the alternative if such approval does not contravene any other applicable requirement.) The test method and procedures selected shall be based on a consideration of the diversity of the organic species present and their total concentration, and on a consideration of the potential presence of interfering gases.

The control efficiency (i.e., the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined by calculating the percent reduction in mass emissions between the inlet and outlet of the control system.

The test shall be conducted while the emissions unit(s) is operating at or near its maximum capacity, unless otherwise specified or approved by the Ohio EPA, Southeast District Office.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA, Southeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA, Southeast District Office's refusal to accept the results of the emission test(s).

Personnel from the Ohio EPA, Southeast District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

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A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA, Southeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA, Southeast District Office.

F. Miscellaneous Requirements

None.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	OAC rule 3745-17-07(A) OAC rule 3745-17-11(B)
P013 - Fine Gold Kettle 2 vented to a wet scrubber	OAC rule 3745-31-05(A)(3)	OAC rule 3745-23-06

Applicable Emissions
Limitations/Control Measures

This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

There shall be no visible emissions other than water vapor from the scrubber exhaust stack.

See A.2.b. below.

Nitrogen Oxide Compounds (NO_x) emissions shall not exceed :
0.040 lb NO_x/ lb fine gold,
3.81 lb NO_x / day,
0.70 TPY

Hydrochloric acid (HCl) emissions shall not exceed:

0.0045 lb HCl/ lb fine gold,
0.43 lb HCl / day,
0.078 TPY

Use of Best Available Control Methods to minimize fugitive emissions from this emission unit.

See A.2.a. below.

Particulate emissions (PE) are not anticipated from this emission unit.

The emission limitations specified in these rules are less stringent than the emission limitations established pursuant to OAC rule

3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a** The enclosure has been designed using corrosion resistant materials with adequate containment and air flow to minimize fugitive emissions in accordance with good engineering practices. These enclosures are necessary for employee safety. Therefore no recordkeeping or reporting is necessary to ensure proper operation.
- 2.b** The no visible emission limit pertains to NO_x and acid emissions. Visible emissions evaluations are based on color, rather than opacity.

B. Operational Restrictions

1. The permittee shall maintain the water flow rate, pressure drop and the pH range for the scrubber at the following levels while the emission unit is in operation:
 - a. a flow rate of not less than 396 gallons per minute (@ 9000 cfm inlet gas flow) in stage-1 and 702 gallons per minute (@ 9000 cfm inlet gas flow) in stage-2.
 - b. a pressure drop range of 6.0 to 8.5 inches of water.
 - c. a pH range of 5.5 to 7.5 in stage-1 and 6.0 to 9.5 in stage-2.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall properly install, operate and maintain equipment to continuously monitor and record on a continuous chart recorder the pH while the emission unit is in operation. The flow rate and the pressure drop in stage-1 and in stage-2 of the scrubber shall also be monitored while the emission unit is in operation. The monitoring equipment shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
2. The permittee shall collect and record the following information :
 - a. The pH of the scrubber in stage-1 and in stage-2 (the continuous chart recorder will meet this requirement).
 - b. The flow rate (in gpm) in the scrubber stage-1 and stage-2, on a daily basis at a minimum.
 - c. The pressure drop (in inches of water) of the scrubber (stage-1 and stage-2) on a daily basis at a minimum.

- d. A log or record of the downtime for the collection system, control device, monitoring equipment, and the associated emission unit(s) which were operating during the downtime period.
3. The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions (except water vapor) from the stack serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. the total duration of any visible emission incident; and
 - c. any corrective actions taken to eliminate the visible emissions.
4. The permit to install for emissions units, P001 - P005 and P008 - P015 was evaluated based on the maximum total materials and the design parameters of the emissions unit's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

Pollutant: hydrochloric acid

TLV (mg/m³): 7.5 mg/m³

Maximum Hourly Emission Rate (lbs/hr): 2.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level

Concentration (ug/m³): 71.53 ug/m³

MAGLC (ug/m³): 179 ug/m³

Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will

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not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the "Air Toxic Policy" include the following:

- a. Changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;
- b. Changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and,
- c. Physical changes to the emissions unit or its exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

5. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy":
 - a. A description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);
 - b. Documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and,
 - c. Where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify all periods of time during which the water flow rate, the pressure drop, and the pH did not comply with the allowable values specified above for this emission unit. The reports shall identify the cause(s) (if known) of the excursion, duration of the excursion, applicable operating rates during the

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excursion, and the corrective actions which were taken for each excursion. These reports shall be submitted in accordance with the General Terms and Conditions of this permit.

If an excursion did not occur during the reporting period, then a report stating that fact is required.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions were observed from the stack serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Ohio EPA, Southeast District Office by January 31 and July 31 of each year and shall cover the previous 6-month period.

E. Testing Requirements

1. a. Emission Limitation: This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

Applicable Compliance Method: Compliance shall be demonstrated based upon emissions testing in accordance with methods and procedures in section E.2.

- b. Emission Limitation: Nitrogen Oxide Compounds (NO_x) emissions shall not exceed :
 0.040 lb NO_x/ lb fine gold,
 3.81 lb NO_x / day,
 0.70 TPY

Applicable Compliance Method: Compliance shall be demonstrated using the following equation for potential to emit:

26.3 lb NO_x per batch {based on stoichiometry balanced chemical reaction data}
 6 hrs per batch
 1 batch per day
 1400 troy ounces crude metal per batch
 90% scrubber control, 95% capture (based on application information)

$(26.3 \text{ lb NO}_x/\text{batch unc.}) (90\%\text{control (95\% capture)}) / (1400 \text{ troy oz crude metal}) / 14.58 \text{ troy oz / lb} = 0.040 \text{ lb NO}_x/\text{ lb gold}$

$0.040 \text{ lb NO}_x/\text{ lb gold} (96 \text{ lb gold/day/batch}) = 3.81 \text{ lb NO}_x/\text{day}$

$3.81 \text{ lb NO}_x/\text{day} (365 \text{ d/yr}) (1/2000 \text{ lb / ton}) = 0.70 \text{ TPY NO}_x$

If required, the permittee shall demonstrate compliance with the lb NO_x / lb gold emission limitation in accordance with 40 CFR Part 60, Appendix A, Method 7E. Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

- c. Emission Limitation: Hydrochloric acid (HCl) emissions shall not exceed:
0.0045 lb HCl/ lb fine gold,
0.43 lb HCl / day,
0.078 TPY

Applicable Compliance Method: Compliance shall be demonstrated using the following equation for potential to emit:

6 hrs per reaction (batch)
1.0 batch per day
32.21 gallons HCl in solution per batch
1400 troy oz crude metal per batch
90% scrubber control, 95% capture (based on application information)

$(3.0 \text{ lb HCl/batch unc.}) (90\% \text{ control } (95\% \text{ capture})) / (1400 \text{ troy oz gold}) / 14.58 \text{ troy oz / lb} = 0.0045 \text{ lb HCl/ lb gold}$

$0.0045 \text{ lb HCl/lb gold } (96 \text{ lb gold/batch})(1 \text{ batch/day}) = 0.43 \text{ lb HCl / day}$

$0.43 \text{ lb HCl /day } (365 \text{ d/yr})(1/2000 \text{ lb/ton}) = 0.078 \text{ TPY HCl}$

If required, the permittee shall demonstrate compliance with the lb/lb gold emission limitation in accordance with 40 CFR Part 60, Appendix A, Method 26 or 26A. Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

- d. Emission Limitation: There shall be no visible emissions other than water vapor from the scrubber exhaust stack.

Applicable Compliance Method: Compliance shall be demonstrated based upon Test Method 22-like visible emission observations. (Although Test Method 22 applies to fugitive emissions units, the visible/no visible emissions observation technique of 40 CFR Part 60, Appendix A, Method 22 can be applied to ducted emissions, i.e., Test Method

22-like visible emissions observations.)

2. The permittee shall conduct, or have conducted, an initial emission test for this emissions unit within 6 months after the startup of the emission unit.

The emission testing shall be conducted to demonstrate that the 2-stage wet scrubber serving emissions units P001 - P005 and P008 - P015 is in compliance with the 90% removal efficiency limitation for nitrogen oxide compounds, sulfur dioxide and hydrochloric acid .

The following test method(s) shall be employed to demonstrate compliance with the removal efficiency requirement for the two-stage scrubber:

Methods 1-4 and 6C for SO₂,

Methods 1-4 and 7E for NO_x, and

Methods 1-4 and 26 or 26A for HCl .

Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA. (The Ohio EPA will consider the request, including an evaluation of the applicability, necessity, and validity of the alternative, and may approve the use of the alternative if such approval does not contravene any other applicable requirement.) The test method and procedures selected shall be based on a consideration of the diversity of the organic species present and their total concentration, and on a consideration of the potential presence of interfering gases.

The control efficiency (i.e., the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined by calculating the percent reduction in mass emissions between the inlet and outlet of the control system.

The test shall be conducted while the emissions unit(s) is operating at or near its maximum capacity, unless otherwise specified or approved by the Ohio EPA, Southeast District Office.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA, Southeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA, Southeast District Office's refusal to accept the results of the emission test(s).

Personnel from the Ohio EPA, Southeast District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

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A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA, Southeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA, Southeast District Office.

F. Miscellaneous Requirements

None.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	OAC rule 3745-17-07(A) OAC rule 3745-17-11(B)
P014 - Fine Gold Kettle 3 vented to a wet scrubber	OAC rule 3745-31-05(A)(3)	OAC rule 3745-23-06

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Applicable Emissions
Limitations/Control Measures

This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

There shall be no visible emissions other than water vapor from the scrubber exhaust stack.

See A.2.b. below.

Nitrogen Oxide Compounds (NO_x) emissions shall not exceed :
0.040 lb NO_x/ lb fine gold,
3.81 lb NO_x / day,
0.70 TPY

Hydrochloric acid (HCl) emissions shall not exceed:

0.0045 lb HCl/ lb fine gold,
0.43 lb HCl / day,
0.078 TPY

Use of Best Available Control Methods to minimize fugitive emissions from this emission unit.

See A.2.a. below.

Particulate emissions (PE) are not anticipated from this emission unit.

The emission limitations specified in these rules are less stringent than the emission limitations established

pursuant to OAC rule
3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a** The enclosure has been designed using corrosion resistant materials with adequate containment and air flow to minimize fugitive emissions in accordance with good engineering practices. These enclosures are necessary for employee safety. Therefore no recordkeeping or reporting is necessary to ensure proper operation.
- 2.b** The no visible emission limit pertains to NO_x and acid emissions. Visible emissions evaluations are based on color, rather than opacity.

B. Operational Restrictions

1. The permittee shall maintain the water flow rate, pressure drop and the pH range for the scrubber at the following levels while the emission unit is in operation:
- a. a flow rate of not less than 396 gallons per minute (@ 9000 cfm inlet gas flow) in stage-1 and 702 gallons per minute (@ 9000 cfm inlet gas flow) in stage-2.
 - b. a pressure drop range of 6.0 to 8.5 inches of water.
 - c. a pH range of 5.5 to 7.5 in stage-1 and 6.0 to 9.5 in stage-2.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall properly install, operate and maintain equipment to continuously monitor and record on a continuous chart recorder the pH while the emission unit is in operation. The flow rate and the pressure drop in stage-1 and in stage-2 of the scrubber shall also be monitored while the emission unit is in operation. The monitoring equipment shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
2. The permittee shall collect and record the following information :
- a. The pH of the scrubber in stage-1 and in stage-2 (the continuous chart recorder will meet this requirement).
 - b. The flow rate (in gpm) in the scrubber stage-1 and stage-2, on a daily basis at a minimum.
 - c. The pressure drop (in inches of water) of the scrubber (stage-1 and stage-2) on a daily basis at a minimum.

- d. A log or record of the downtime for the collection system, control device, monitoring equipment, and the associated emission unit(s) which were operating during the downtime period.
3. The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions (except water vapor) from the stack serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. the total duration of any visible emission incident; and
 - c. any corrective actions taken to eliminate the visible emissions.
 4. The permit to install for emissions units, P001 - P005 and P008 - P015 was evaluated based on the maximum total materials and the design parameters of the emissions unit's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

Pollutant: hydrochloric acid

TLV (mg/m³): 7.5 mg/m³

Maximum Hourly Emission Rate (lbs/hr): 2.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level

Concentration (ug/m³): 71.53 ug/m³

MAGLC (ug/m³): 179 ug/m³

Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters

used in applying the "Air Toxic Policy" include the following:

- a. Changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;
- b. Changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and,
- c. Physical changes to the emissions unit or its exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

5. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy":
 - a. A description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);
 - b. Documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and,
 - c. Where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify all periods of time during which the water flow rate, the pressure drop, and the pH did not comply with the allowable values specified above for this emission unit. The reports shall identify the cause(s) (if known) of the excursion, duration of the excursion, applicable operating rates during the

excursion, and the corrective actions which were taken for each excursion. These reports shall be submitted in accordance with the General Terms and Conditions of this permit.

If an excursion did not occur during the reporting period, then a report stating that fact is required.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions were observed from the stack serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Ohio EPA, Southeast District Office by January 31 and July 31 of each year and shall cover the previous 6-month period.

E. Testing Requirements

1. a. Emission Limitation: This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

Applicable Compliance Method: Compliance shall be demonstrated based upon emissions testing in accordance with methods and procedures in section E.2.

- b. Emission Limitation: Nitrogen Oxide Compounds (NO_x) emissions shall not exceed :
0.040 lb NO_x/ lb fine gold,
3.81 lb NO_x / day,
0.70 TPY

Applicable Compliance Method: Compliance shall be demonstrated using the following equation for potential to emit:

26.3 lb NO_x per batch {based on stoichiometry balanced chemical reaction data}
6 hrs per batch
1 batch per day
1400 troy ounces crude metal per batch
90% scrubber control, 95% capture (based on application information)

$(26.3 \text{ lb NO}_x/\text{batch unc.}) (90\%\text{control (95\% capture)}) / (1400 \text{ troy oz crude metal}) / 14.58 \text{ troy oz} / \text{lb} = 0.040 \text{ lb NO}_x/ \text{lb gold}$

$0.040 \text{ lb NO}_x/ \text{lb gold} (96 \text{ lb gold/day/batch}) = 3.81 \text{ lb NO}_x/ \text{day}$

$3.81 \text{ lb NO}_x/\text{day} (365 \text{ d/yr}) (1/2000 \text{ lb} / \text{ton}) = 0.70 \text{ TPY NO}_x$

If required, the permittee shall demonstrate compliance with the lb NO_x / lb gold emission limitation in accordance with 40 CFR Part 60, Appendix A, Method 7E. Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

- c. Emission Limitation: Hydrochloric acid (HCl) emissions shall not exceed:
 0.0045 lb HCl/ lb fine gold,
 0.43 lb HCl / day,
 0.078 TPY

Applicable Compliance Method: Compliance shall be demonstrated using the following equation for potential to emit:

6 hrs per reaction (batch)
 1.0 batch per day
 32.21 gallons HCl in solution per batch
 1400 troy oz crude metal per batch
 90% scrubber control, 95% capture (based on application information)

$(3.0 \text{ lb HCl/batch unc.}) (90\% \text{ control } (95\% \text{ capture})) / (1400 \text{ troy oz gold}) / 14.58 \text{ troy oz} / \text{lb} = 0.0045 \text{ lb HCl/ lb gold}$

$0.0045 \text{ lb HCl/lb gold } (96 \text{ lb gold/batch})(1 \text{ batch/day}) = 0.43 \text{ lb HCl / day}$

$0.43 \text{ lb HCl/day } (365 \text{ d/yr})(1/2000 \text{ lb/ton}) = 0.078 \text{ TPY HCl}$

If required, the permittee shall demonstrate compliance with the lb/lb gold emission limitation in accordance with 40 CFR Part 60, Appendix A, Method 26 or 26A. Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

- d. Emission Limitation: There shall be no visible emissions other than water vapor from the scrubber exhaust stack.

Applicable Compliance Method: Compliance shall be demonstrated based upon Test Method 22-like visible emission observations. (Although Test Method 22 applies to fugitive emissions units, the visible/no visible emissions observation technique of 40 CFR Part 60, Appendix A, Method 22 can be applied to ducted emissions, i.e., Test Method

22-like visible emissions observations.)

2. The permittee shall conduct, or have conducted, an initial emission test for this emissions unit within 6 months after the startup of the emission unit.

The emission testing shall be conducted to demonstrate that the 2-stage wet scrubber serving emissions units P001 - P005 and P008 - P015 is in compliance with the 90% removal efficiency limitation for nitrogen oxide compounds, sulfur dioxide and hydrochloric acid .

The following test method(s) shall be employed to demonstrate compliance with the removal efficiency requirement for the two-stage scrubber:

Methods 1-4 and 6C for SO₂,

Methods 1-4 and 7E for NO_x, and

Methods 1-4 and 26 or 26A for HCl .

Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA. (The Ohio EPA will consider the request, including an evaluation of the applicability, necessity, and validity of the alternative, and may approve the use of the alternative if such approval does not contravene any other applicable requirement.) The test method and procedures selected shall be based on a consideration of the diversity of the organic species present and their total concentration, and on a consideration of the potential presence of interfering gases.

The control efficiency (i.e., the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined by calculating the percent reduction in mass emissions between the inlet and outlet of the control system.

The test shall be conducted while the emissions unit(s) is operating at or near its maximum capacity, unless otherwise specified or approved by the Ohio EPA, Southeast District Office.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA, Southeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA, Southeast District Office's refusal to accept the results of the emission test(s).

Personnel from the Ohio EPA, Southeast District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

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A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA, Southeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA, Southeast District Office.

F. Miscellaneous Requirements

None.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	OAC rule 3745-17-07(A) OAC rule 3745-17-11(B)
P015 - Fine Gold Kettle 4 vented to a wet scrubber	OAC rule 3745-31-05(A)(3)	OAC rule 3745-23-06

Applicable Emissions
Limitations/Control Measures

This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

There shall be no visible emissions other than water vapor from the scrubber exhaust stack.

See A.2.b. below.

Nitrogen Oxide Compounds (NO_x) emissions shall not exceed :
0.040 lb NO_x/ lb fine gold,
3.81 lb NO_x / day,
0.70 TPY

Hydrochloric acid (HCl) emissions shall not exceed:

0.0045 lb HCl/ lb fine gold,
0.43 lb HCl / day,
0.078 TPY

Use of Best Available Control Methods to minimize fugitive emissions from this emission unit.

See A.2.a. below.

Particulate emissions (PE) are not anticipated from this emission unit.

The emission limitations specified in these rules are less stringent than the emission limitations established pursuant to OAC rule

3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a** The enclosure has been designed using corrosion resistant materials with adequate containment and air flow to minimize fugitive emissions in accordance with good engineering practices. These enclosures are necessary for employee safety. Therefore no recordkeeping or reporting is necessary to ensure proper operation.
- 2.b** The no visible emission limit pertains to NO_x and acid emissions. Visible emissions evaluations are based on color, rather than opacity.

B. Operational Restrictions

1. The permittee shall maintain the water flow rate, pressure drop and the pH range for the scrubber at the following levels while the emission unit is in operation:
- a. a flow rate of not less than 396 gallons per minute (@ 9000 cfm inlet gas flow) in stage-1 and 702 gallons per minute (@ 9000 cfm inlet gas flow) in stage-2.
 - b. a pressure drop range of 6.0 to 8.5 inches of water.
 - c. a pH range of 5.5 to 7.5 in stage-1 and 6.0 to 9.5 in stage-2.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall properly install, operate and maintain equipment to continuously monitor and record on a continuous chart recorder the pH while the emission unit is in operation. The flow rate and the pressure drop in stage-1 and in stage-2 of the scrubber shall also be monitored while the emission unit is in operation. The monitoring equipment shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
2. The permittee shall collect and record the following information :
- a. The pH of the scrubber in stage-1 and in stage-2 (the continuous chart recorder will meet this requirement).
 - b. The flow rate (in gpm) in the scrubber stage-1 and stage-2, on a daily basis at a minimum.
 - c. The pressure drop (in inches of water) of the scrubber (stage-1 and stage-2) on a daily basis at a minimum.

- d. A log or record of the downtime for the collection system, control device, monitoring equipment, and the associated emission unit(s) which were operating during the downtime period.
3. The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions (except water vapor) from the stack serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. the total duration of any visible emission incident; and
 - c. any corrective actions taken to eliminate the visible emissions.
 4. The permit to install for emissions units, P001 - P005 and P008 - P015 was evaluated based on the maximum total materials and the design parameters of the emissions unit's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by this emissions unit using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

Pollutant: hydrochloric acid

TLV (mg/m³): 7.5 mg/m³

Maximum Hourly Emission Rate (lbs/hr): 2.0 lbs/hr

Predicted 1-Hour Maximum Ground-Level
Concentration (ug/m³): 71.53 ug/m³

MAGLC (ug/m³): 179 ug/m³

Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters

used in applying the "Air Toxic Policy" include the following:

- a. Changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;
- b. Changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and,
- c. Physical changes to the emissions unit or its exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

5. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"
 - a. A description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);
 - b. Documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and,
 - c. Where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify all periods of time during which the water flow rate, the pressure drop, and the pH did not comply with the allowable values specified above for this emission unit. The reports shall identify the cause(s) (if known) of the excursion, duration of the excursion, applicable operating rates during the

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excursion, and the corrective actions which were taken for each excursion. These reports shall be submitted in accordance with the General Terms and Conditions of this permit.

If an excursion did not occur during the reporting period, then a report stating that fact is required.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions were observed from the stack serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Ohio EPA, Southeast District Office by January 31 and July 31 of each year and shall cover the previous 6-month period.

E. Testing Requirements

1. a. Emission Limitation: This emissions unit shall be vented to the two-stage wet scrubber which will reduce emissions of regulated pollutants by at least 90 %.

Applicable Compliance Method: Compliance shall be demonstrated based upon emissions testing in accordance with methods and procedures in section E.2.

- b. Emission Limitation: Nitrogen Oxide Compounds (NO_x) emissions shall not exceed :
 0.040 lb NO_x/ lb fine gold,
 3.81 lb NO_x / day,
 0.70 TPY

Applicable Compliance Method: Compliance shall be demonstrated using the following equation for potential to emit:

26.3 lb NO_x per batch {based on stoichiometry balanced chemical reaction data}
 6 hrs per batch
 1 batch per day
 1400 troy ounces crude metal per batch
 90% scrubber control, 95% capture (based on application information)

$(26.3 \text{ lb NO}_x/\text{batch unc.}) (90\%\text{control (95\% capture)}) / (1400 \text{ troy oz crude metal}) / 14.58 \text{ troy oz / lb} = 0.040 \text{ lb NO}_x/\text{ lb gold}$

$0.040 \text{ lb NO}_x/\text{ lb gold} (96 \text{ lb gold/day/batch}) = 3.81 \text{ lb NO}_x/\text{day}$

$3.81 \text{ lb NO}_x/\text{day} (365 \text{ d/yr}) (1/2000 \text{ lb / ton}) = 0.70 \text{ TPY NO}_x$

If required, the permittee shall demonstrate compliance with the lb NO_x / lb gold emission limitation in accordance with 40 CFR Part 60, Appendix A, Method 7E. Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

- c. Emission Limitation: Hydrochloric acid (HCl) emissions shall not exceed:
 0.0045 lb HCl/ lb fine gold,
 0.43 lb HCl / day,
 0.078 TPY

Applicable Compliance Method: Compliance shall be demonstrated using the following equation for potential to emit:

6 hrs per reaction (batch)
 1.0 batch per day
 32.21 gallons HCl in solution per batch
 1400 troy oz crude metal per batch
 90% scrubber control, 95% capture (based on application information)

$(3.0 \text{ lb HCl/batch unc.}) (90\% \text{ control } (95\% \text{ capture})) / (1400 \text{ troy oz gold}) / 14.58 \text{ troy oz / lb} = 0.0045 \text{ lb HCl/ lb gold}$

$0.0045 \text{ lb HCl/lb gold } (96 \text{ lb gold/batch})(1 \text{ batch/day}) = 0.43 \text{ lb HCl / day}$

$0.43 \text{ lb HCl /day } (365 \text{ d/yr})(1/2000 \text{ lb/ton}) = 0.078 \text{ TPY HCl}$

If required, the permittee shall demonstrate compliance with the lb/lb gold emission limitation in accordance with 40 CFR Part 60, Appendix A, Method 26 or 26A. Compliance with the annual limitation shall be assumed as long as compliance with the daily limitation is maintained (the annual limitation was calculated by multiplying the daily limitation by 365, and then dividing by 2000).

- d. Emission Limitation: There shall be no visible emissions other than water vapor from the scrubber exhaust stack.

Applicable Compliance Method: Compliance shall be demonstrated based upon Test Method 22-like visible emission observations. (Although Test Method 22 applies to fugitive emissions units, the visible/no visible emissions observation technique of 40 CFR Part 60, Appendix A, Method 22 can be applied to ducted emissions, i.e., Test Method

22-like visible emissions observations.)

2. The permittee shall conduct, or have conducted, an initial emission test for this emissions unit within 6 months after the startup of the emission unit.

The emission testing shall be conducted to demonstrate that the 2-stage wet scrubber serving emissions units P001 - P005 and P008 - P015 is in compliance with the 90% removal efficiency limitation for nitrogen oxide compounds, sulfur dioxide and hydrochloric acid .

The following test method(s) shall be employed to demonstrate compliance with the removal efficiency requirement for the two-stage scrubber:

Methods 1-4 and 6C for SO₂,

Methods 1-4 and 7E for NO_x, and

Methods 1-4 and 26 or 26A for HCl .

Alternative U.S. EPA-approved test methods may be used with prior approval from the Ohio EPA. (The Ohio EPA will consider the request, including an evaluation of the applicability, necessity, and validity of the alternative, and may approve the use of the alternative if such approval does not contravene any other applicable requirement.) The test method and procedures selected shall be based on a consideration of the diversity of the organic species present and their total concentration, and on a consideration of the potential presence of interfering gases.

The control efficiency (i.e., the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined by calculating the percent reduction in mass emissions between the inlet and outlet of the control system.

The test shall be conducted while the emissions unit(s) is operating at or near its maximum capacity, unless otherwise specified or approved by the Ohio EPA, Southeast District Office.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA, Southeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA, Southeast District Office's refusal to accept the results of the emission test(s).

Personnel from the Ohio EPA, Southeast District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

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A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA, Southeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA, Southeast District Office.

F. Miscellaneous Requirements

None.