San Joaquin Valley Air Pollution Control District

Authority to Construct Application Review

Motor Vehicle and Mobile Equipment Coating with a Non-Heated Paint Booth

|  |  |  |  |
| --- | --- | --- | --- |
| Facility Name: |  | Date: | 10/18/18 |
| Mailing Address: |  | Engineer: |  |
| Lead Engineer: |  |
| Contact Person: |  |
| Telephone: |  |
| Fax: |  |
| E-Mail: |  |
| Application #: |  |
| Project #: |  |
| Deemed Complete: |  |

*Note: This document only constitutes as a GEAR if used for motor vehicle coating operations with a* ***non-heated*** *paint booth at non-major source facilities. This document may be used as a template at a major source by expanding the proposal, discussions, and tables as necessary to accommodate extra units or special cases (PSD significant emissions increase, Major Modification, CEQA, etc,) using District Policy (APR-1010).*

**I. Proposal**

The primary business of this existing / new facility is the repairing and painting of motor vehicles and mobile equipment. The facility is applying for an Authority to Construct (ATC) for a motor vehicle and mobile equipment painting operation with a paint spray booth.

In order to allow priming outside of the paint booth, PM10 emissions from priming outside the booth will be limited to 2.0 lb/day.

**II. Applicable Rules**

Rule 2201 New and Modified Stationary Source Review Rule (2/18/16)

Rule 2410 Prevention of Significant Deterioration (6/16/11)

Rule 2520 Federally Mandated Operating Permits (6/21/01)

Rule 4001 New Source Performance Standards (4/14/99)

Rule 4002 National Emissions Standards for Hazardous Air Pollutants (5/20/04)

Rule 4101 Visible Emissions (2/17/05)

Rule 4102 Nuisance (12/17/92)

Rule 4201 Particulate Matter Concentration (12/17/92)

Rule 4612 Motor Vehicle and Mobile Equipment Coating Operations (10/21/10)

CH&SC 41700 Health Risk Assessment

CH&SC 42301.6 School Notice

Public Resources Code 21000-21177: California Environmental Quality Act (CEQA)

California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387: CEQA Guidelines

**III. Project Location**

*Indicate the actual location of this project including the street address. Verify whether or not the equipment is or will be located within 1,000 feet of the nearest outer boundary of a K-12 school. State this in the EE.*

The facility is located at 1990 E Gettysburg in Fresno, CA. The equipment is not located within 1,000 feet of the outer boundary of a K-12 school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project.

**IV. Process Description**

This paint spray booth will be used solely for automotive body repair and refinishing. The paint spray operation occurs in two stages: automotive body preparation (including application of primer and sanding) and application of topcoat. At this facility, auto body prep work, including the application of primer (which includes primer pretreatment, surfacer, and sealer) may take place outside of the paint spray booth. The application of the topcoat will take place inside of the paint spray booth.

**V. Equipment Listing**

One XX' L X XX' W X XX' H paint spray booth

XX hp exhaust fan

Dry/Water/Oil-wash filter system

Approved HVLP spray gun(s) or electrostatic spray gun(s)

## hp electric air compressor

X-XXXX-XX-XX: MOTOR VEHICLE AND MOBILE EQUIPMENT COATING OPERATION WITH A PAINT SPRAY BOOTH WITH DRY EXHAUST FILTERS

**VI. Emission Control Technology Evaluation**

Only PM10 and VOC are emitted from the priming and top coating operation. PM10 emissions from the priming operation will be controlled by the use of High Volume, Low Pressure (HVLP) spray equipment. For the top coating operation, the applicant has proposed to use a paint spray booth with a dry exhaust filter system for PM10 control, HVLP spray equipment for PM10 and VOC control. The paint spray booth with a dry exhaust filter system will control PM10 emissions by filtering air from inside the paint booth before it is exhausted to the atmosphere. The HVLP spray equipment will control PM10 and VOC emissions by having more paint transferred to the desired surfaces than traditional painting equipment. The applicant will be required to use solvents that comply with the VOC content limits as specified in District Rule 4612 for the cleaning of the application equipment.

**VII. General Calculations**

1. **Assumptions**
* VOC emissions are limited to 54.7 lb/day = 19,966 lb/year (District Practice).
* HVLP gun transfer efficiency (TE) is 75% (per STAPPA/ALAPCO Vol. 2, pg. 14-7, 5/30/91).
* Dry exhaust filter removal efficiency (RE) is 95% (March 26, 2006 Memorandum to EPA, ‘Review of Spray Booth Filter Information for the Area Source Motor Vehicle and Mobile Equipment Refinishing National Emission Standers for Hazardous Air Pollutants (NESHAP)’).
* For emissions calculations purposes the facility is assumed to operate 24 hr/day and 365 days/year (District assumption to conservatively estimate emissions).
* Daily PM10 emissions from priming outside of the paint booth will be limited to 2.0 lb/day (District Practice).

**B. Emission Factors**

* PM10 emission factor (EF) for color coating (worst case) is 5.5 lb/gal, assuming all particulate matter (PM) emissions are PM10 (STAPPA/ALAPCO Vol. 2, pg. 14-4, 5/30/91).
* PM10 EF for primer (worst case) is 3.0 lb/gal, assuming all PM emissions are PM10 (STAPPA/ALAPCO Vol. 2, pg. 14-4, 5/30/91).
* Primer VOC content is 2.1 lb/gal (District Rule 4612 limit).

**C. Calculations**

**1. Pre-Project Potential to Emit (PE1)**

Since this is a new unit at this facility, the daily and annual pre-project emissions are zero for all criteria pollutants.

PE1 = 0.0 lb/day = 0 lb/year

**2. Post Project Potential to Emit (PE2)**

**a. Daily PE2 (lb/day)**

Emissions from the outside priming operation (PE2Priming):

As stated above, the daily PM10 emissions for priming is limited 2.0 lb/day.

PE2Priming PM10 (lb/day) = PM10 limit (lb/day)

 **= 2.0 lb/day**

Then uncontrolled priming PM10 emissions are determined:

Uncontrolled PE2Priming PM10 (lb/day) = HVLP controlled PM10 limit (lb/day) ÷ (1 - HVLP Transfer Efficiency)

Uncontrolled PE2Priming PM10 = 2.0 lb/day ÷ (1 – 0.75)

Uncontrolled PE2Priming PM10 = 8.0 lb/day

Next the maximum daily primer usage is determined:

Primer Usage (gal/day) = Uncontrolled PM10 (lb/day) ÷ Primer PM10 Content (lb/gal)

Primer Usage = 8.0 lb/day ÷ 3.0 lb/gal

 = 2.7 gal/day

Last the VOC emissions from the outside priming operation are determined:

PE2Priming VOC (lb/day) = Primer Usage (gal/day) x Primer VOC Content (lb/gal)

PE2Priming VOC = 2.7 gal/day x 2.1 lb/gal

 **= 5.7 lb/day**

Emissions from the coating operation (PE2Coating):

First the daily VOC emissions for coating are determined. In order to maintain the VOC emissions limit of 54.7 lb/day, the emissions from the priming operation will be subtracted from the daily limit and the balance applied to the coating done inside the booth.

PE2Coating VOC (lb/day) = VOC limit (lb/day) – PE2Priming VOC (lb/day)

PE2Coating VOC = 54.7 lb/day – 5.7 lb/day

 **= 49.0 lb/day**

PM10 emissions from the coating operation will be determined by back calculation using the maximum amount of color coatings used on a daily basis. The maximum daily color coating usage is determined using the VOC content from the Rule 4612 complaint coating that will result in the largest daily color coating usage. For this project, a VOC content of 2.1 lb/gal will be used.

Daily Coating Usage (gal/day) = PE2Coating (lb/day) ÷ Color Coating VOC Content (lb/gal)

Daily Coating Usage = 49.0 lb/day ÷ 2.1 lb/gal

 = 23.3 gal/day

Next the daily PM10 emissions from coating are determined:

PE2Coating PM10 (lb/day) = Daily Coating Usage (gal/day) x Color Coating PM10 Content (lb/gal) x (1 – HVLP Transfer Efficiency) x (1 – Dry Filter Control Efficiency)

PE2Coating PM10  = 23.3 gal/day x 5.5 lb/gal x (1 – 0.75) x (1 – 0.95)

 **= 1.6 lb/day**

*{Note: After entering the data in columns highlight the last column and press F9.}*

|  |
| --- |
| **Daily PE2** |
| Pollutant | PE2Priming (lb/day) | PE2Coating (lb/day) | PE2Total (lb/day)  |
| PM10 | 2.0 | 1.6 | 3.6 |
| VOC | 5.7 | 49.0 | 54.7 |

**b. Annual PE2 (lb/year)**

The annual PE2 for VOC emissions and PM10 emissions from priming is determined by using the daily PE2 (proposed by the applicant) shown in the previous table and a maximum annual operating schedule of 365 day/year.

PE2Annual (lb/year) = (PE2Priming (lb/day) x 365 day/year) + (PE2Coating (lb/day) x 365 day/year)

*{Note: After entering the data in columns highlight the last column and press F9.}*

|  |
| --- |
| **Annual PE2** |
| Pollutant | PE2Priming (lb/year) | PE2Coating(lb/year) | PE2Total (lb/year) |
| PM10 | 730 | 584 | 1,314 |
| VOC | 2,081 | 17,885 | 19,966 |

**3. Pre-Project Stationary Source Potential to Emit (SSPE1)**

Pursuant to District Rule 2201, the SSPE1 is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of Emission Reduction Credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions (AER) that have occurred at the source, and which have not been used on-site.

*{Note: For* ***NEW*** *facility please use the following otherwise delete}*

Since this is a new facility, there are no valid ATCs, PTOs, or ERCs at the Stationary Source; therefore, the SSPE1 is equal to zero.

*{Note: In case this is an* ***EXISTING*** *facility, please add SSPE1 discussion and SSPE1 table, otherwise delete}*

**4. Post Project Stationary Source Potential to Emit (SSPE2)**

Pursuant to District Rule 2201, the SSPE2 is the PE from all units with valid ATCs or PTOs at the Stationary Source and the quantity of ERCs which have been banked since September 19, 1991 for AERs that have occurred at the source, and which have not been used on-site.

|  |
| --- |
| **SSPE2 (lb/year)** |
| Permit Unit | NOX | SOX | PM10 | CO | VOC |
| C-XXXX-1-0 (new) | 0 | 0 | 1,314 | 0 | 19,966 |
| SSPE2 | 0 | 0 | 1,314 | 0 | 19,966 |

**5. Major Source Determination**

**Rule 2201 Major Source Determination:**

Pursuant to District Rule 2201, a Major Source is a stationary source with a SSPE2 equal to or exceeding one or more of the following threshold values. For the purposes of determining major source status the following shall not be included:

* Any ERCs associated with the stationary source,
* Emissions from non-road IC engines (i.e. IC engines at a particular site at the facility for less than 12 months),
* Fugitive emissions, except for the specific source categories specified in 40 CFR 51.165.

|  |
| --- |
| **Rule 2201 Major Source Determination****(lb/year)** |
|  | NOX | SOX | PM10 | PM2.5 | CO | VOC |
| SSPE1 | 0 | 0 | 0 | 0 | 0 | 0 |
| SSPE2 | 0 | 0 | 1,314 | 1,314 | 0 | 19,966 |
| Major Source Threshold | 20,000 | 140,000 | 140,000 | 140,000 | 200,000 | 20,000 |
| Major Source? | No | No | No | No | No | No |

Note: To be conservative, PM2.5 assumed to be equal to PM10

As seen in the table above, the facility is not an existing Major Source and is not becoming a Major Source as a result of this project.

**Rule 2410 Major Source Determination:**

The facility is not an existing PSD major source for any regulated NSR pollutant expected to be emitted at this facility. Therefore, the facility is not an existing major source for PSD.

**6. Baseline Emissions (BE)**

The BE calculation (in lb/year) is performed pollutant-by-pollutant for each unit within the project to calculate the QNEC, and if applicable, to determine the amount of offsets required.

Pursuant to District Rule 2201, BE = PE1 for:

* Any unit located at a non-Major Source,
* Any Highly-Utilized Emissions Unit, located at a Major Source,
* Any Fully-Offset Emissions Unit, located at a Major Source, or
* Any Clean Emissions Unit, located at a Major Source.

otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to District Rule 2201.

As shown in Section VII.C.5 above, the facility is not a Major Source for any pollutant.

Therefore BE = PE1.

Since this is a new emissions unit, BE = PE1 = 0 for all criteria pollutants.

**7. SB 288 Major Modification**

SB 288 Major Modification is defined in 40 CFR Part 51.165 as "any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act."

Since this facility is not a Major Source for any of the pollutants addressed in this project, this project does not constitute an SB 288 major modification.

**8. Federal Major Modification**

District Rule 2201, Section 3.18 states that Federal Major Modifications are the same as “Major Modification” as defined in 40 CFR 51.165 and part D of Title I of the CAA.

Since this facility is not a Major Source for any pollutants, this project does not constitute a Federal Major Modification.

**9. Rule 2410 - Prevention of Significant Deterioration (PSD) Applicability Determination**

Rule 2410 applies to any pollutant regulated under the Clean Air Act, except those for which the District has been classified nonattainment. The pollutants which must be addressed in the PSD applicability determination for sources located in the SJV and which are emitted in this project are: (See 52.21 (b) (23) definition of significant)

* PM
* PM10

**Project Emissions Increase - New Major Source Determination**

The post project potentials to emit from all new and modified units are compared to the PSD major source thresholds to determine if the project constitutes a new major source subject to PSD requirements.

Since this facility is not a major source for any pollutant post project it is not a PSD major source and no further disucussion is required.

**10. Quarterly Net Emissions Change (QNEC)**

The QNEC is calculated solely to establish emissions that are used to complete the District’s PAS emissions profile screen. Detailed QNEC calculations are included in Appendix B.

**VIII. Compliance**

*{Note: The Compliance Section shall document compliance with District Rules. List and discuss every relevant applicable rule. Discuss the basis for every condition that will be added to the ATC.}*

**Rule 2201 New and Modified Stationary Source Review Rule**

**A. Best Available Control Technology (BACT)**

**1. BACT Applicability**

Pursuant to District Rule 2201, Section 4.1, BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis. Unless specifically exempted by Rule 2201, BACT shall be required for the following actions\*:

a. Any new emissions unit with a potential to emit exceeding two pounds per day,

b. The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,

c. Modifications to an existing emissions unit with a valid Permit to Operate resulting in an Adjusted Increase in Permitted Emissions (AIPE) exceeding two pounds per day, and/or

d. Any new or modified emissions unit, in a stationary source project, which results in an SB 288 Major Modification or a Federal Major Modification, as defined by the rule.

\*Except for CO emissions from a new or modified emissions unit at a Stationary Source with an SSPE2 of less than 200,000 pounds per year of CO.

**a. New emissions units – PE > 2 lb/day**

As shown in the table below the new coating operation has two emissions units: the priming operation done outside the booth and the coating operation conducted in the booth. BACT is triggered for VOC only since the PE is greater than 2 lb/day.

|  |
| --- |
| **Daily PE2** |
| Pollutant | PE2Priming (lb/day) | PE2Coating (lb/day) |
| PM10 | 2.0 | 1.6 |
| VOC | 5.7 | 49.0 |

**b. Relocation of emissions units – PE > 2 lb/day**

As discussed in Section I above, there are no emissions units being relocated from one stationary source to another; therefore BACT is not triggered

**c. Modification of emissions units – AIPE > 2 lb/day**

As discussed in Section I above, there are no modified emissions units associated with this project. Therefore, BACT is not triggered.

**d. SB 288/Federal Major Modification**

As discussed in Sections VII.C.7 and VII.C.8 above, this project does not constitute an SB 288 and/or Federal Major Modification for any pollutant. Therefore BACT is not triggered for any pollutant.

**2. BACT Guideline**

BACT Guideline 4.2.1, applies to the automotive spray painting operation in this project. [Automotive Spray Painting Operations, < 5.0 MMBtu/hr] (See Appendix C)

**3. Top Down BACT Analysis**

Per Permit Services Policies and Procedures for BACT, a Top-Down BACT analysis shall be performed as a part of the application review for each application subject to the BACT requirements pursuant to the District’s NSR Rule.

Pursuant to the attached Top-Down BACT Analysis, which appears in Appendix D of this report, BACT is satisfied with:

VOC: HVLP spray guns and VOC coatings and solvents in compliance with District Rule 4612

The applicant has proposed to the use of HVLP spray guns and VOC coatings and solvents in compliance with District Rule 4612. Therefore, all BACT requirements are satisfied.

**B. Offsets**

**1. Offset Applicability**

Pursuant to District Rule 2201, Section 4.5, offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the SSPE2 equals or exceeds the offset threshold levels in Table 4-1 of Rule 2201.

The SSPE2 is compared to the offset thresholds in the following table.

|  |
| --- |
| **Offset Determination****(lb/year)** |
|  | NOX | SOX | PM10 | CO | VOC |
| SSPE2 | 0 | 0 | 1,314 | 0 | 19,966 |
| Offset Thresholds | 20,000 | 54,750 | 29,200 | 200,000 | 20,000 |
| Offsets triggered? | No | No | No | No | No |

**2. Quantity of Offsets Required**

As seen above, the SSPE2 is not greater than the offset thresholds for all the pollutants; therefore, offset calculations are not necessary and offsets will not be required for this project.

**C. Public Notification**

**1. Applicability**

Pursuant to District Rule 2201, Section 5.4, public noticing is required for:

a. New Major Sources, Federal Major Modifications, and SB 288 Major Modifications,

b. Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,

c. Any project which results in the offset thresholds being surpassed,

d. Any project with an SSIPE of greater than 20,000 lb/year for any pollutant, and/or

e. Any project which results in a Title V significant permit modification

**a. New Major Sources, Federal Major Modifications, and SB 288 Major Modifications**

New Major Sources are new facilities, which are also Major Sources. As shown in Section VII.C.5 above, the SSPE2 is not greater than the Major Source threshold for any pollutant. Therefore, public noticing is not required for this project for new Major Source purposes.

As demonstrated in Sections VII.C.7 and VII.C.8, this project does not constitute an SB 288 or Federal Major Modification; therefore, public noticing for SB 288 or Federal Major Modification purposes is not required.

**b. PE > 100 lb/day**

Applications which include a new emissions unit with a PE greater than 100 pounds during any one day for any pollutant will trigger public noticing requirements. As seen in Section VII.C.2 above, this project does not include a new emissions unit which has daily emissions greater than 100 lb/day for any pollutant; therefore, public noticing for PE > 100 lb/day purposes is not required.

**c. Offset Threshold**

Pursuant to District Rule 2201, Section 4.5.3, offset requirements shall be triggered on a pollutant-by-pollutant basis, unless exempted pursuant to Section 4.6, offsets shall be required if the post-project Stationary Source Potential to Emit (SSPE2) equals or exceeds specific threshold levels.

The SSPE1 and SSPE2 are compared to the offset thresholds in the following table.

|  |
| --- |
| **Offset Thresholds****(lb/year)** |
| Pollutant | SSPE1 (lb/year) | SSPE2(lb/year) | OffsetThreshold | Public Notice Required? |
| NOX | 0 | 0 | 20,000 lb/year | No |
| SOX | 0 | 0 | 54,750 lb/year | No |
| PM10 | 0 | 1,314 | 29,200 lb/year | No |
| CO | 0 | 0 | 200,000 lb/year | No |
| VOC | 0 | 19,966 | 20,000 lb/year | No |

As detailed above, there are no thresholds surpassed with this project; therefore, public noticing is not required for offset purposes.

**d. SSIPE > 20,000 lb/year**

Public notification is required for any permitting action that results in a SSIPE of more than 20,000 lb/year of any affected pollutant. According to District policy, the SSIPE = SSPE2 – SSPE1. The SSIPE is compared to the SSIPE Public Notice thresholds in the following table.

|  |
| --- |
| **SSIPE Public Notice Thresholds****(lb/year)** |
| Pollutant | SSPE2 (lb/year) | SSPE1 (lb/year) | SSIPE (lb/year) | SSIPE Public Notice Threshold | Public Notice Required? |
| NOx | 0 | 0 | 0 | 20,000 lb/year | No |
| SOx | 0 | 0 | 0 | 20,000 lb/year | No |
| PM10 | 1,314 | 0 | 1,314 | 20,000 lb/year | No |
| CO | 0 | 0 | 0 | 20,000 lb/year | No |
| VOC | 19,966 | 0 | 19,966 | 20,000 lb/year | No |

As demonstrated above, the SSIPEs for all pollutants are less than 20,000 lb/year; therefore, public noticing for SSIPE purposes is not required.

**e. Title V Significant Permit Modification**

Since this facility does not have a Title V operating permit, this change is not a Title V significant modification; therefore, public noticing is not required for this purpose.

**2. Public Notice Action**

As discussed above, this project will not result in emissions, for any pollutant, which would subject the project to any of the noticing requirements listed above. Therefore, public notice will not be required for this project.

**D. Daily Emission Limits (DELs)**

DELs and other enforceable conditions are required by Rule 2201 to restrict a unit’s maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. The DEL must be contained in the latest ATC and contained in or enforced by the latest PTO and enforceable, in a practicable manner, on a daily basis. DELs are also required to enforce the applicability of BACT.

The following conditions will be included on the ATC to establish DEL:

* {4924} Facility-wide VOC emissions shall not exceed 54.7 pounds in any one day. [District Rule 2201]
* {4446} Particulate matter (PM10) emission rate (including painting and priming) shall not exceed 3.6 lb/day. [District Rule 2201]
* {4936} PM10 emissions from the use of the primer outside of the booth - including pretreatment, surfacer, and sealer - shall not exceed 2.0 pounds per day. [District Rule 2201]
* {4441} Booth shall be equipped with dry filters achieving a PM10 control efficiency of at least 95% by weight. [District Rule 2201]
* {4938} Daily VOC emissions of each coating, primer, and/or solvent shall be calculated as follows: daily VOC emissions = VOC content (lb/gallon) as applied x usage (gallon/day). Total daily VOC emissions is the sum of VOC emissions from all coatings, primers, and/or solvents used. [District Rule 2201]
* {4940} Daily PM10 emissions of each coating and/or primer applied shall be calculated as follows: daily PM10 emissions of each coating and/or primer applied = coating and/or primer density (lb/gallon) x coating and/or primer solids content (% by weight) x usage (gallons/day) x control efficiency factor.  Control efficiency factor is 0.25 for primers applied outside the booth, and 0.0125 for coating and/or primers applied inside the booth.  Total daily PM10 emissions is the sum of PM10 emissions from all coating and/or primers applied. [District Rule 2201]
* {1535} All coating, except application of primer, shall be conducted in booth with filters in place, fan(s) operating, and doors closed. [District Rule 2201]

**E. Compliance Assurance**

**1. Source Testing**

Pursuant to District Policy APR 1705, source testing is not required to demonstrate compliance with Rule 2201.

**2. Monitoring**

No monitoring is required to demonstrate compliance with Rule 2201.

**3. Recordkeeping**

Recordkeeping is required to demonstrate compliance with the offset, public notification and daily emission limit requirements of Rule 2201. The following conditions will be included on the ATC:

* {4939} On a daily basis, the permittee shall calculate and record the following: total daily VOC emissions (lb/day); total daily PM10 emissions (lb/day); and total daily PM10 emissions (lb/day) from the use of primer outside of the booth. [District Rule 2201]
* {4443} Permittee shall maintain daily records of quantity (gallons) and solids content of primer applied outside the booth. Permittee shall also maintain daily records of VOC content as applied (lb/gal) of each coating used, quantity (gallons) of each coating used, and calculated daily VOC emissions. [District Rule 1070]
* {4937} The permittee shall maintain records on a daily basis and have available at all times the following: a current list of all coatings used that includes the material name and manufacturer, application method, coating type and mix ratio specific to the coating, the VOC Actual for Coatings and VOC Regulatory for Coatings as applied, density and solids content of coatings, and the quantity of each type of coating used; current manufacturer specification sheets, material safety data sheets (MSDS), technical data sheets, or air quality data sheets, which list the VOC Actual for Coatings and VOC Regulatory for Coatings of each ready-to-spray coating and automotive coating components; and purchase records identifying the coating type, name. [District Rules 2201 and 4612]
* {4243} The permittee shall keep the following records for each solvent used for cleaning activities: the quantity of solvent used; a copy of the manufacturer's product data or material safety data sheet (MSDS); the solvent's name and manufacturer, the VOC content of the solvent in grams/liter or pounds/gallon, and the mix ratio and VOC content of the batch when the solvent is a mixture of different materials blended by the permittee. [District Rules 2201 and 4612]
* {4927} On a monthly basis, the permittee shall calculate and record the VOC emissions in pounds from this unit for the prior calendar month. [District Rule 2201]
* {4928} On a monthly basis, the permittee shall calculate and record the facility-wide VOC emissions in pounds for the prior 12 calendar month period. The facility-wide VOC emissions shall be calculated by summing the VOC emissions from the previous 12 calendar months from every permitted unit at this facility. [District Rule 2201]
* {4244} Records shall be retained on-site for a minimum of five years and made available for District inspection upon request. [District Rules 2201 and 4612]

**4. Reporting**

No reporting is required to demonstrate compliance with Rule 2201.

**Rule 2410 Prevention of Significant Deterioration**

As shown in Section VII.C.9 above, this project does not result in a new PSD major source or PSD major modification. No further discussion is required.

**Rule 2520 Federally Mandated Operating Permits**

Since this facility’s potential emissions do not exceed any major source thresholds of Rule 2201, this facility is not a major source, and Rule 2520 does not apply.

**Rule 4001 New Source Performance Standards**

This rule incorporates NSPS from Part 60, Chapter 1, Title 40, Code of Federal Regulations (CFR); and applies to all new sources of air pollution and modifications of existing sources of air pollution listed in 40 CFR Part 60. However, no subparts of 40 CFR Part 60 apply to motor vehicle coating operations.

**Rule 4002 National Emissions Standards for Hazardous Air**

This rule incorporates NESHAPs from Part 61, Chapter I, Subchapter C, Title 40, CFR and the NESHAPs from Part 63, Chapter I, Subchapter C, Title 40, CFR; and applies to all sources of hazardous air pollution listed in 40 CFR Part 61 or 40 CFR Part 63.

Subpart HHHHHH, *National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources* may apply to these coating operations. However, the District has not been delegated the authority to implement Area Source requirements from NESHAP regulations for non-Major Sources. Therefore, compliance with the provisions of Subpart HHHHHH, will not be demonstrated for the equipment in this project.

**Rule 4101 Visible Emissions**

Rule 4101 states that no air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. As long as the equipment is properly maintained and operated, compliance with the visible emissions limit is expected. The following condition will be included on the ATC:

* {15} No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]

**Rule 4102 Nuisance**

Rule 4102 prohibits discharge of air contaminants which could cause injury, detriment, nuisance or annoyance to the public. Public nuisance conditions are not expected as a result of this operation, provided the equipment is well maintained. Therefore, compliance with this rule is expected. The following condition will be included on the ATC:

* {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

**California Health & Safety Code 41700 (Health Risk Assessment)**

District Policy APR 1905 – *Risk Management Policy for Permitting New and Modified Sources* specifies that for an increase in emissions associated with a proposed new source or modification, the District perform an analysis to determine the possible impact to the nearest resident or worksite.

*Example (a): (For a project with a Prioritization score ≤ 1.)*

An HRA is not required for a project with a total facility prioritization score of less than or equal to one. According to the Technical Services Memo for this project (Appendix E), the total facility prioritization score including this project was less than or equal to one. Therefore, no further analysis is required to determine the impact from this project and compliance with the District’s Risk Management Policy is expected.

*Example (b): (For a project with a Prioritization score > 1.)*

An HRA is not required for a project with a total facility prioritization score of less than one. According to the Technical Services Memo for this project (Appendix E), the total facility prioritization score including this project was greater than one. Therefore, an HRA was required to determine the short-term acute and long-term chronic exposure from this project.

The cancer risk for this project is shown below:

|  |
| --- |
| **HRA Summary** |
| Unit | Cancer Risk | T-BACT Required |
| X-XXXX-X-X | XX per million | Yes/No |

**Discussion of T-BACT**

*{Note: Discuss whether a T-BACT is or is not triggered and the requirements which satisfy T-BACT (if any).}*

*Example (a): (For a project where T-BACT not triggered.)*

BACT for toxic emission control (T-BACT) is required if the cancer risk exceeds one in one million. As demonstrated above, T-BACT is not required for this project because the HRA indicates that the risk is not above the District’s thresholds for triggering T-BACT requirements; therefore, compliance with the District’s Risk Management Policy is expected.

*Example (b): (For a project where T-BACT is triggered [for PM10 and VOC] – Motor vehicle coating operation.)*

*{Note: BACT is not addressed for PM10 emission in DR 2201 Section above, so if T-BACT is triggered than it will need to be addressed above.}*

BACT for toxic emission control (T-BACT) is required if the cancer risk exceeds one in one million. As demonstrated above, T-BACT is required for this project because the HRA indicates that the risk is above the District’s thresholds for triggering T-BACT requirements.

For this project T-BACT is triggered for PM10 and VOC. T-BACT is satisfied with BACT for PM10 and VOC (see Appendix D), which is the use of a spray booth with exhaust filters and a 95% control efficiency, HVLP spray guns and low VOC coatings and solvents in compliance with District Rule 4612; therefore, compliance with the District’s Risk Management Policy is expected.

*{Note: Also discuss whether the project has acute or chronic indices, or a cancer risk greater than the District’s significance levels.}*

*For example: (For most projects.)*

District policy APR 1905 also specifies that the increase in emissions associated with a proposed new source or modification not have acute or chronic indices, or a cancer risk greater than the District’s significance levels (i.e. acute and/or chronic indices greater than 1 and a cancer risk greater than 20 in a million). As outlined by the Technical Services Memo in Appendix E of this report, the emissions increases for this project was determined to be less than significant.

*{Note: List all conditions necessary to ensure that the equipment is operated in the manner assumed when the RMR was performed.}*

The following conditions will be included on the ATC:

* {4929} No coatings, solvents, or additives containing any of the following compounds shall be used: lead compounds, hexavalent chromium, cadmium, and/or nickel compounds. [District Rule 4102]

**Rule 4201** **Particulate Matter Concentration**

Section 3.1 prohibits discharge of dust, fumes, or total particulate matter into the atmosphere from any single source operation in excess of 0.1 grain per dry standard cubic foot.

PM Conc. (gr/scf) = (PM emission rate) x (7,000 gr/lb)

 (Air flow rate) x (60 min/hr) x (24 hr/day)

PM10 emission rate = 3.6 lb/day. Assuming 100% of PM is PM10

Exhaust Gas Flow = XXXX scfm

PM Conc (gr/scf) = [(3.6 lb/day) x (7,000 gr/lb)] ÷ [(XXXX ft3/min) x (60 min/hr) x (24 hr/day)]

PM Conc = XXXX gr/scf

The following condition will be included on the ATC to show compliance:

* {14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]

**Rule 4612 Motor Vehicle and Mobile Equipment Coating Operations**

The purpose of this rule is to limit volatile organic compound (VOC) emissions from coatings associated with the coatings of motor vehicles, mobile equipment, and associated parts and components. It also limits the VOC emissions from the organic solvent cleaning, storage, and disposal associated with such operations.

Section 5.1 requires that no person shall apply to any motor vehicle, mobile equipment, or associated parts and components, any coating with a VOC regulatory content, as calculated pursuant to Section 3.45.1, in excess of the applicable limits in Table 1, except as provided in Section 5.3. These limits are presented in the following table:

|  |
| --- |
| **Table 1 - Rule 4612 Coating VOC Limits** |
| Coating Category | VOC Regulatory Limit, as applied, in grams/liter (lb per gallon) |
| VOC Limits | VOC of proposed coatings | Compliant |
| Adhesion Promoter | 540 (4.5) | -- | -- |
| Clear Coating | 250 (2.1) | XXX | Yes |
| Color Coating | 420 (3.5) | XXX | Yes |
| Multi-Color Coating | 680 (5.7) | -- | -- |
| Pretreatment Coating | 660 (5.5) | -- | -- |
| Primer | 250 (2.1) | 2.1 | Yes |
| Primer Sealer | 250 (2.1) | -- | -- |
| Single-Stage Coating | 340 (2.8) | XXX | Yes |
| Temporary Protective Coating | 60 (0.5) | -- | -- |
| Truck Bed Liner Coating | 310 (2.6) | -- | -- |
| Underbody Coating | 430 (3.6) | -- | -- |
| Uniform Finish Coating | 540 (4.5) | -- | -- |
| Any other coating type | 250 (2.1) | -- | -- |

The applicant has proposed that the coatings used at the facility meet the requirements of this rule. The following condition will be included on the ATC to ensure compliance:

* {4895} The VOC Regulatory content of coatings, as applied, shall not exceed any of the following limits: adhesion promoter 540 g/l (4.5 lb/gal), clear coating 250 g/l (2.1 lb/gal), color coating 420 g/l (3.5 lb/gal), multi-color coating 680 g/l (5.7 lb/gal), pretreatment coating 660 g/l (5.5 lb/gal), primer 250 g/l (2.1 lb/gal), primer sealer 250 g/l (2.1 lb/gal), single-stage coating 340 g/l (2.8 lb/gal), temporary protective coating 60 g/l (0.5 lb/gal), truck bed liner coating 310 g/l (2.6 lb/gal), underbody coating 430 g/l (3.6 lb/gal), uniform finish coating 540 g/l (4.5 lb/gal), and any other coating type 250 g/l (2.1 lb/gal). The VOC Regulatory content for coatings shall be defined as the VOC in grams per liter of coating (or pounds per gallon of coating), excluding water and exempt compounds. [District Rules 2201 and 4612]

Section 5.7 requires that except for underbody coatings, graphic arts operations, truck bed liner coatings, or any coating use of less than one (1.0) fluid ounce (29.6 milliliters), no person shall apply any coating to any motor vehicle, mobile equipment, or associated parts and components unless one of the following application methods is used:

5.7.1 Brush, dip, or roller.

5.7.2 Electrostatic spray.

5.7.3 High-Volume Low-Pressure (HVLP) spray equipment.

5.7.3.1 HVLP spray equipment shall be operated in accordance with the manufacturer’s recommendations.

5.7.3.2 A person shall not sell or offer for sale for use within the SJVAB any HVLP spray gun without a permanent marking denoting the maximum inlet air pressure in psig at which the gun will operate within the parameters specified in Section 3.0.

5.7.4 Use of a spray gun not permanently marked HVLP. If a spray gun is used, the operator must demonstrate that the gun meets the HVLP definition in Section 3.21 in design and use. A satisfactory demonstration must be based on the manufacturer’s published technical material on the design of the gun and by a demonstration of the operation of the gun using an air pressure tip gauge designed specifically for the gun in use.

5.7.5 Any other coating application method that is capable of achieving at least 65 percent transfer efficiency, as determined per Section 6.8.8. Written approval from the APCO shall be obtained for each alternative method prior to use.

The facility proposes using an HVLP gun. This application method complies with Section 5.7 of Rule 4612. The following conditions will be included on the ATC to ensure compliance:

* {4237} Only high-volume low-pressure (HVLP) spray equipment, electrostatic, bush, dip, or roll coating application equipment, or other application equipment approved by the District in writing, shall be used. All application equipment shall be operated in accordance with the manufacturer's recommendations. [District Rules 2201 and 4612]
* {4238} If an HVLP spray gun is used, the operator must demonstrate that the spray gun operates between 0.1 and 10 pounds per square inch, gauge, (psig) air atomizing pressure, measured dynamically at the center of the air cap and at the air horns. For a gun permanently labeled HVLP by the manufacturer, a satisfactory demonstration shall either be in the form of manufacturer's published technical information or by a demonstration of the operation of the gun using an air pressure tip gauge from the manufacturer of the gun. For a gun not permanently labeled HVLP by the manufacturer, a satisfactory demonstration shall be based on manufacturer's published technical material and by a demonstration of the operation of the gun using an air pressure tip gauge from the manufacturer of the gun. [District Rule 4612]

The Section 5.8 organic solvent cleaning requirements are as follows:

5.8.1 For solvent cleaning operations other than for bug and tar removal, a person shall not use solvents that have VOC content greater than 25 grams VOC per liter of cleaning material, as calculated using the equation listed in Section 3.45.3.

5.8.2 For bug and tar removal, a person shall not use any material other than bug and tar remover regulated under the Consumer Products Regulation (California Code of Regulations Section 94507 et seq.).

5.8.3 In lieu of complying with Sections 5.8.1 and 5.8.2, a person may control VOC emissions from solvent cleaning with an APCO-approved VOC emission control system for the solvent cleaning operation that meets the requirements of Section 5.3.

Section 5.9 requires that a person shall store or dispose of fresh or spent solvents, waste solvent cleaning materials such as cloth, paper, etc., coatings, adhesives, catalysts, and thinners in closed, non-absorbent and non-leaking containers. The containers shall remain closed at all times except when depositing or removing the contents of the containers or when the container is empty.

The following conditions will be included on the ATC to ensure compliance with the requirements of Sections 5.8 and 5.9:

* {4239} For solvent cleaning operations other than for bug and tar removal, the permittee shall not use solvents that have VOC content greater than 25 g/l (0.21 lb/gal) of cleaning material. [District Rule 4612]
* {4240} For bug and tar removal, the permittee shall not use any material other than bug and tar remover regulated under the Consumer Products Regulation (California Code of Regulations Section 94507 et seq.). [District Rule 4612]
* {4241} All fresh or spent solvents, waste solvent cleaning materials such as cloth, paper, etc., coatings, adhesives, catalysts, and thinners shall be stored in closed, non-absorbent and non-leaking containers. The containers shall remain closed at all times except when depositing or removing the contents of the containers or when the container is empty. [District Rule 4612]

Section 6.0 administrative requirements are as follows:

6.1 Compliance Statement Requirement

6.1.1 For each individual automotive coating or automotive coating component, the manufacturer and repackager shall include the following information on product data sheets, or an equivalent medium:

6.1.1.1 The VOC Actual for Coatings and VOC Regulatory for Coatings, expressed in grams per liter, calculated pursuant to Section 3.45;

6.1.1.2 The weight percentage of volatiles, water, and exempt compounds;

6.1.1.3 The volume percentage of water and exempt compounds; and

6.1.1.4 The density of the material (in grams per liter).

6.1.2 For each individual ready to spray mixture (based on the manufacturer’s and repackager’s stated mix ratio), the manufacturer and repackager shall include the following information on product data sheets, or an equivalent medium:

6.1.2.1 The VOC Actual for Coatings and VOC Regulatory for Coatings, expressed in grams per liter, calculated pursuant to Section 3.45;

6.1.2.2 The weight percentage of volatiles, water, and exempt compounds;

6.1.2.3 The volume percentage of water and exempt compounds; and

6.1.2.4 The density of the material (in grams per liter).

Section 6.2 requires the manufacturer and repackager of automotive coatings or automotive coating components shall include on all containers the applicable use category(ies), and the VOC Actual for Coatings and VOC Regulatory for Coatings, as supplied, expressed in grams per liter.

Section 6.3 requires records required by this rule shall be retained on site for a period of five years, the records shall be made available on site to the APCO, ARB, or EPA, and the records shall be submitted to the APCO, ARB, or EPA upon request.

Section 6.4 states any person who uses coatings subject to this rule shall maintain records on a daily basis, and have available at all times, on site, the following:

6.4.1 A current list of all coatings used that are subject to this rule. This list shall include the following information for each coating:

6.4.1.1 Material name and manufacturer;

6.4.1.2 Application method;

6.4.1.3 Coating type (as listed in Section 5.1) and mix ratio specific to the coating;

6.4.1.4 VOC Actual for Coatings and VOC Regulatory for Coatings, as applied, calculated pursuant to Section 3.45; and

6.4.1.5 Quantity of each type of coating used.

6.4.2 Current manufacturer specification sheets, material safety data sheets, technical data sheets, or air quality data sheets, which list the VOC Actual for Coatings and VOC Regulatory for Coatings of each ready-to-spray coating (based on the manufacturer’s state mix ratio) and automotive coating components.

6.4.3 Purchase records identifying the coating type (as listed in Section 5.1), name, and volume of coatings.

Section 6.5 requires an operator using solvents for cleaning shall keep the following records:

6.5.1 Keep a copy of the manufacturer’s product data sheet or material safety data sheet of the solvents used for organic solvent cleaning activities.

6.5.2 Maintain a current list of solvents that are being used for organic solvent cleaning activities. The list shall include the following information:

6.5.2.1 The name of the solvent and its manufacturer’s name.

6.5.2.2 The VOC content of the solvent expressed in grams per liter or lb/gallon.

6.5.2.3 When the solvent is a mixture of different materials that are blended by the person, the mix ratio of the batch shall be recorded and the VOC content of the batch shall be calculated and recorded in order to determine compliance with the specified limits of VOC content.

6.5.3 The quantity of solvent used for solvent cleaning activities.

The following conditions will be listed on the proposed ATC to ensure compliance with the requirements of Section 6.0:

* {4937} The permittee shall maintain records on a daily basis and have available at all times the following: a current list of all coatings used that includes the material name and manufacturer, application method, coating type and mix ratio specific to the coating, the VOC Actual for Coatings and VOC Regulatory for Coatings as applied, density and solids content of coatings, and the quantity of each type of coating used; current manufacturer specification sheets, material safety data sheets (MSDS), technical data sheets, or air quality data sheets, which list the VOC Actual for Coatings and VOC Regulatory for Coatings of each ready-to-spray coating and automotive coating components; and purchase records identifying the coating type, name. [District Rules 2201 and 4612]
* {4243} The permittee shall keep the following records for each solvent used for cleaning activities: the quantity of solvent used; a copy of the manufacturer's product data or material safety data sheet (MSDS); the solvent's name and manufacturer, the VOC content of the solvent in grams/liter or pounds/gallon, and the mix ratio and VOC content of the batch when the solvent is a mixture of different materials blended by the permittee. [District Rules 2201 and 4612]
* {4244} Records shall be retained on-site for a minimum of five years and made available for District inspection upon request. [District Rules 2201 and 4612]

Therefore, this operation is in compliance with the requirements of this rule.

**California Health & Safety Code 42301.6 (School Notice)**

The District has verified that this site is not located within 1,000 feet of a school. Therefore, pursuant to California Health and Safety Code 42301.6, a school notice is not required.

**California Environmental Quality Act (CEQA)**

CEQA requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents.  The San Joaquin Valley Unified Air Pollution Control District (District) adopted its *Environmental Review Guidelines* (ERG) in 2001.  The basic purposes of CEQA are to:

* Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities.
* Identify the ways that environmental damage can be avoided or significantly reduced.
* Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.
* Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

The District performed an Engineering Evaluation (this document) for the proposed project and determined that the project qualifies for ministerial approval under the District’s Guideline for Expedited Application Review (GEAR).  Section 21080 of the Public Resources Code exempts from the application of CEQA those projects over which a public agency exercises only ministerial approval.  Therefore, the District finds that this project is exempt from the provisions of CEQA.

**Indemnification Agreement/Letter of Credit Determination**

According to District Policy APR 2010 (CEQA Implementation Policy), when the District is the Lead or Responsible Agency for CEQA purposes, an indemnification agreement and/or a letter of credit may be required.  The decision to require an indemnity agreement and/or a letter of credit are based on a case-by-case analysis of a particular project’s potential for litigation risk, which in turn may be based on a project’s potential to generate public concern, its potential for significant impacts, and the project proponent’s ability to pay for the costs of litigation without a letter of credit, among other factors.

As described above, the project requires only ministerial approval, and is exempt from the provisions of CEQA.  As such, an Indemnification Agreement or a Letter of Credit will not be required for this project in the absence of expressed public concern.

**IX. Recommendation**

Compliance with all applicable rules and regulations is expected. Issue ATC X-XXXX-X-X subject to the permit conditions on the attached draft ATC in Appendix A.

**X. Billing Information**

|  |
| --- |
| **Annual Permit Fees** |
| Permit Number | Fee Schedule | Fee Description | Annual Fee |
| X-XXXX-X-X | 3020-01-X | XXX hp electric motors | $XXX.00 |

**Appendices**

A*:* Draft ATC

B: Quarterly Net Emissions Change

C: BACT Guideline

D: Top-Down BACT Analysis

E: HRA Summary

F: Emission Profile

**APPENDIX A**

**Draft ATC**

**APPENDIX B**

**Quarterly Net Emissions Change (QNEC)**

**Quarterly Net Emissions Change (QNEC)**

The Quarterly Net Emissions Change is used to complete the emission profile screen for the District’s PAS database. The QNEC shall be calculated as follows:

QNEC = PE2 - PE1, where:

QNEC = Quarterly Net Emissions Change for each emissions unit, lb/qtr.

PE2 = Post Project Potential to Emit for each emissions unit, lb/qtr.

PE1 = Pre-Project Potential to Emit for each emissions unit, lb/qtr.

Using the values in Sections VII.C.2 and VII.C.1 in the evaluation above, quarterly PE2 and quarterly PE1 can be calculated as follows:

PE2quarterly = PE2annual ÷ 4 quarters/year

PE1quarterly = PE1annual ÷ 4 quarters/year

|  |
| --- |
| **Quarterly NEC [QNEC]** |
|  | PE2 (lb/qtr) | PE1 (lb/qtr) | QNEC (lb/qtr) |
| NOX | 0 | 0 | 0 |
| SOX | 0 | 0 | 0 |
| PM10 | 329 | 0 | 329 |
| CO | 0 | 0 | 0 |
| VOC | 4,992 | 0 | 4,992 |

**APPENDIX C**

**BACT Guideline**

|  |
| --- |
| **Best Available Control Technology (BACT ) Guideline 4.2.1Last Update: 3/23/2010Automotive Spray Painting Operation, < 5.0 MMBtu/hr\*\***  |

| **Pollutant** | **Achieved in Practice or in the SIP** | **Technologically Feasible** | **Alternate Basic Equipment** |
| --- | --- | --- | --- |
| NOx | Natural gas or LPG-fired burner |  |  |
| PM10 | Spray Booth with Exhaust Filters; 95% control efficiency |  | Other compliant coating methods as stated in Rule 4612 |
| VOC | HVLP spray guns, coatings, cleaning materials, and solvents compliant with District Rule 4612 | VOC capture and control system | Other compliant coating methods as stated in Rule 4612 |

|  |
| --- |
| *\*\* This Determination is also applicable to automotive spray painting operations without a heat source* |

**APPENDIX D**

**Top-Down BACT Analysis**

**Top-Down BACT Analysis**

**BACT Analysis for VOC Emissions:**

**a. Step 1 - Identify All Possible Control Technologies**

The SJVAPCD BACT Clearinghouse guideline 4.2.1, (Last Updated 03/23/2010), identifies achieved in practice and technologically feasible BACT control technologies for automotive spray painting operations, with or without a < 5.0 MMBtu heater for VOC emissions as follows:

1. HVLP spray guns, coatings compliant with District Rule 4612 - achieved in practice
2. VOC capture and control system (incineration or carbon adsorption) - technologically feasible
3. Other compliant coating methods as stated in Rule 4612 – alternate basic equipment

**b. Step 2 - Eliminate Technologically Infeasible Options**

None of the above listed control technologies are technologically infeasible.

**c. Step 3 - Rank Remaining Control Technologies by Control Effectiveness**

1. VOC capture and control system: 98%/95% - technologically feasible

2. HVLP guns: 75% transfer efficiency - achieved in practice

3. Other compliant coating methods as stated in Rule 4612: 65% transfer efficiency (airless spray gun) – alternate basic equipment

**d. Step 4 - Cost Effectiveness Analysis - VOC Capture and Control Systems**

**Design Parameters for booth control technologies:**

Exhaust Gas Flow Rate (Q): 2,000 cfm (manufacture’s data)

VOC (lb/year): 19,966 lb-VOC/year

**Thermal/Catalytic Incineration:**

98% total control efficiency using a VOC capture and control system with thermal/catalytic incineration and 100% VOC capture.

A. Emission Reduction:

Based on the above determined project emissions and assuming a VOC capture efficiency of 100% and incinerator destruction efficiency of 98%, the amount of VOC emissions reduced is calculated below.

VOC Emission Reductions = Annual PEVOC × 1 tons/2,000 lb × Overall Control Eff.

 = 19,966 lb/year × 1 tons/2,000 lb × 0.98

 = **9.8 ton/year**

B. Annual Natural Gas Cost:

It will be shown that the cost of the natural gas alone will be adequate to cause these technologies to be not cost effective per District BACT policy. This estimate does not include the capital cost of purchasing the oxidizer unit or any additional operational and maintenance costs. The increase in temperature of the contaminated air stream required by a catalytic incineration system is less than for a thermal incineration. Therefore, by demonstrating that the cost of the natural gas required by a catalytic incinerator would cause such a system to not be cost effective will also be sufficient to show that a thermal oxidation system would not be cost effective either.

The cost of natural gas for this operation is calculated based on an operating schedule of 24 hr/day and 8,760 hr/year (525,600 min/year). A heat exchanger efficiency of 50% is assumed.

Natural Gas Usage = Flow Rate × CpAir × ΔT × HEF

Where: Flow Rate = Air flow through the incinerator (25,600 cfm)

CpAir = specific heat of air is 0.194 Btu/scf - °F

ΔT = increase in the temperature of the contaminated air stream required for catalytic oxidation to occur (It will be assumed that the air stream would increase in temperature from 77°F to 600°F.)

HEF = heat exchanger factor (0.5, assumed)

Natural Gas Usage = 2,000 cfm × 0.194 Btu/ scf - °F × (600 °F - 77 °F) × 0.5

 × 525,600 min/year × MMBtu/106 Btu

= 53,328 MMBtu/year

Natural Gas Cost = 53,328 MMBtu/year × $7.3/MMBtu([[1]](#footnote-1))

= **$389,294**

C. Cost Effectiveness of a Catalytic Incinerator with 100% Capture:

Cost Effectiveness = Natural Gas Cost ($/year) ÷ Emission Reduction (ton-VOC/year)

= $389,294/year ÷ 9.8 ton-VOC/year

= **$39,724/ton-VOC**

The cost of natural gas to operate a catalytic incinerator with 100% capture is $39,724/ton, which is greater than the District’s VOC cost-effectiveness threshold of $17,500/ton. Therefore, this VOC control option is not cost effective and is being removed from consideration for this project.

**Carbon Adsorption:**

95% total control using a VOC capture and control system with carbon adsorption and 100% capture.

A. Emission Reduction:

Based on the above determined emissions and assuming a VOC capture efficiency of 100% and carbon adsorption system control efficiency of 95%, the amount of VOC emissions reduced is calculated below.

VOC Emission Reductions = Annual PEVOC × 1 tons/2,000 lb × Overall Control Eff.

= 19,966 lb/year × 1 tons/2,000 lb × 0.95

= **9.5 ton/year**

B. Annual Carbon Replacement Costs:

Carbon adsorption occurs when air containing VOCs is blown through a carbon unit and the VOCs are adsorbed onto the surface of the cracks in the activated carbon particles. Two main areas of cost are the cost of the carbon adsorption unit itself and the annual operating cost of the unit. The primary annual operating cost is the replacement of the spent activated carbon. It will be shown that the annual cost to replace the spent activated carbon alone will be adequate to cause this technology to be not cost effective per District BACT policy. This estimate does not include the capital cost of purchasing the carbon adsorption unit or any additional operational and maintenance costs.

Since carbon can adsorb 20% of its weight in VOCs, and the control efficiency of carbon adsorption is 95%, the total amount of carbon required per year can be determined as follows:

Carbon Required = 19,966 lb-VOC/year x 0.95 x 1 lb-Carbon/0.2 lb-VOC

= 94,839 lb-Carbon/year

Per EnviroSupply & Service Inc. (<http://envirosupply.net>, July 25, 2017), the cost of carbon replacement for a paint spray booth is $5.00/lb for standard carbon. The annual cost of spent carbon replacement will be:

Annual Carbon Replacement Cost = 94,839 lb-Carbon/year × $5/lb-Carbon

= $474,195/year

C. Cost Effectiveness of a Carbon Adsorption System:

Cost Effectiveness = Annual Carbon Replacement Cost ($/year)

÷ Emission Reduction (ton-VOC/year)

= $474,195/year ÷ 9.5 ton-VOC/year

= **$49,915/ton-VOC**

The cost to operate a carbon adsorption system is $49,915/ton, which is greater than the District’s VOC cost-effectiveness threshold of $17,500/ton. Therefore, this VOC control option is not cost effective and is being removed from consideration for this project.

**HVLP Spray Guns and Coatings Compliant with District Rule 4612:**

The applicant has proposed to use HVLP spray guns and coatings in compliance with District Rule 4612; therefore, a cost effectiveness analysis is not required for this control technology.

**e. Step 5 - Select BACT**

HVLP spray guns and low VOC coatings and solvents in compliance with District Rule 4612 is selected as BACT for this category and class of source. The applicant has proposed to use HVLP spray guns and coatings in compliance with District Rule 4612; therefore, BACT for VOC is satisfied.

**{Use if T-BACT is triggered for PM10, otherwise delete.}**

**Top-Down BACT Analysis**

**BACT Analysis for PM10 Emissions:**

**a. Step 1 - Identify all control technologies**

The SJVUAPCD BACT Clearinghouse guideline 4.2.1 identifies achieved in practice and alternate basic equipment BACT for automotive spray painting operations, <5.0 MMBtu/hr:

1. Spray Booth with Exhaust Filters; 95% control efficiency – achieved in practice
2. Other compliant coating methods as stated in Rule 4612 – alternate basic equipment

No technologically feasible alternatives for this class and category of source are listed.

**b. Step 2 - Eliminate technologically infeasible options**

There are no technologically infeasible options to eliminate from Step 1.

**c. Step 3 - Rank remaining options by control effectiveness**

1. Spray Booth with Exhaust Filters; 95% control efficiency - achieved in practice
2. Other compliant coating methods as stated in District Rule 4612: 65% transfer efficiency (HVLP) – alternate basic equipment

**d. Step 4 - Cost Effectiveness Analysis**

The applicant has proposed the use of a spray booth and the use of HVLP which has a higher control efficiency than either of the two control option listed above. Therefore, a cost effectiveness analysis is not required.

**e. Step 5 - Select BACT**

BACT for PM10 is the use of a spray booth with exhaust filters with a 95% control efficiency. The facility is proposing to meet BACT by the use of a spray booth with exhaust filters with 95% control efficiency and the use of HVLP coating equipment therefore, BACT for PM10 is satisfied.

**APPENDIX E**

**HRA Summary**

**APPENDIX F**

**Emission Profile**

Permit Conditions

*{Note: You may copy and paste the following general condition numbers into the PAS conditions screen:}*

*{Note: Additional conditions may be required by the Technical Services Memo in Appendix E}*

[98, 14, 15, 1535, 4441, 4237, 4238, 4241, 4929, 4239, 4240, 4895, 4924, 4446, 4936, 4443, 4937, 4243, 4938, 4927, 4928, 4939, 4940, 4244]

{98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

{14} Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]

{15} No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]

{1535} All coating, except application of primer, shall be conducted in booth with filters in place, fan(s) operating, and doors closed. [District Rule 2201]

{4441} Booth shall be equipped with dry filters achieving a PM10 control efficiency of at least 95% by weight. [District Rule 2201]

{4237} Only high-volume low-pressure (HVLP) spray equipment, electrostatic, brush, dip, or roll coating application equipment, or other application equipment approved by the District in writing, shall be used. All application equipment shall be operated in accordance with the manufacturer's recommendations. [District Rules 2201 and 4612]

{4238} If an HVLP spray gun is used, the operator must demonstrate that the spray gun operates between 0.1 and 10 pounds per square inch, gauge, (psig) air atomizing pressure, measured dynamically at the center of the air cap and at the air horns. For a gun permanently labeled HVLP by the manufacturer, a satisfactory demonstration shall either be in the form of manufacturer's published technical information or by a demonstration of the operation of the gun using an air pressure tip gauge from the manufacturer of the gun. For a gun not permanently labeled HVLP by the manufacturer, a satisfactory demonstration shall be based on manufacturer's published technical material and by a demonstration of the operation of the gun using an air pressure tip gauge from the manufacturer of the gun. [District Rule 4612]

{4241} All fresh or spent solvents, waste solvent cleaning materials such as cloth, paper, etc., coatings, adhesives, catalysts, and thinners shall be stored in closed, non-absorbent and non-leaking containers. The containers shall remain closed at all times except when depositing or removing the contents of the containers or when the container is empty. [District Rule 4612]

{4929} No coatings, solvents, or additives containing any of the following compounds shall be used: lead compounds, hexavalent chromium, cadmium, and/or nickel compounds. [District Rule 4102]

{4239} For solvent cleaning operations other than for bug and tar removal, the permittee shall not use solvents that have VOC content greater than 25 g/l (0.21 lb/gal) of cleaning material. [District Rule 4612]

{4240} For bug and tar removal, the permittee shall not use any material other than bug and tar remover regulated under the Consumer Products Regulation (California Code of Regulations Section 94507 et seq.). [District Rule 4612]

{4895} The VOC Regulatory content of coatings, as applied, shall not exceed any of the following limits: adhesion promoter 540 g/l (4.5 lb/gal), clear coating 250 g/l (2.1 lb/gal), color coating 420 g/l (3.5 lb/gal), multi-color coating 680 g/l (5.7 lb/gal), pretreatment coating 660 g/l (5.5 lb/gal), primer 250 g/l (2.1 lb/gal), primer sealer 250 g/l (2.1 lb/gal), single-stage coating 340 g/l (2.8 lb/gal), temporary protective coating 60 g/l (0.5 lb/gal), truck bed liner coating 310 g/l (2.6 lb/gal), underbody coating 430 g/l (3.6 lb/gal), uniform finish coating 540 g/l (4.5 lb/gal), and any other coating type 250 g/l (2.1 lb/gal). The VOC Regulatory content for coatings shall be defined as the VOC in grams per liter of coating (or pounds per gallon of coating), excluding water and exempt compounds. [District Rules 2201 and 4612]

{4924} Facility-wide VOC emissions shall not exceed 54.7 pounds in any one day. [District Rule 2201]

{4446} Particulate matter (PM10) emission rate (including painting and priming) shall not exceed 3.6 lb/day. [District Rule 2201]

{4936} PM10 emissions from the use of the primer outside of the booth - including pretreatment, surfacer, and sealer - shall not exceed 2.0 pounds per day. [District Rule 2201]

{4443} Permittee shall maintain daily records of quantity (gallons) and solids content of primer applied outside the booth. Permittee shall also maintain daily records of VOC content as applied (lb/gal) of each coating used, quantity (gallons) of each coating used, and calculated daily VOC emissions. [District Rule 1070]

{4937} The permittee shall maintain records on a daily basis and have available at all times the following: a current list of all coatings used that includes the material name and manufacturer, application method, coating type and mix ratio specific to the coating, the VOC Actual for Coatings and VOC Regulatory for Coatings as applied, density and solids content of coatings, and the quantity of each type of coating used; current manufacturer specification sheets, material safety data sheets (MSDS), technical data sheets, or air quality data sheets, which list the VOC Actual for Coatings and VOC Regulatory for Coatings of each ready-to-spray coating and automotive coating components; and purchase records identifying the coating type, name. [District Rules 2201 and 4612]

{4243} The permittee shall keep the following records for each solvent used for cleaning activities: the quantity of solvent used; a copy of the manufacturer's product data or material safety data sheet (MSDS); the solvent's name and manufacturer, the VOC content of the solvent in grams/liter or pounds/gallon, and the mix ratio and VOC content of the batch when the solvent is a mixture of different materials blended by the permittee. [District Rules 2201 and 4612]

{4938} Daily VOC emissions of each coating, primer, and/or solvent shall be calculated as follows: daily VOC emissions = VOC content (lb/gallon) as applied x usage (gallon/day). Total daily VOC emissions is the sum of VOC emissions from all coatings, primers, and/or solvents used. [District Rule 2201]

{4927} On a monthly basis, the permittee shall calculate and record the VOC emissions in pounds from this unit for the prior calendar month. [District Rule 2201]

{4928} On a monthly basis, the permittee shall calculate and record the facility-wide VOC emissions in pounds for the prior 12 calendar month period. The facility-wide VOC emissions shall be calculated by summing the VOC emissions from the previous 12 calendar months from every permitted unit at this facility. [District Rule 2201]

{4939} On a daily basis, the permittee shall calculate and record the following: total daily VOC emissions (lb/day); total daily PM10 emissions (lb/day); and daily PM10 emissions (lb/day) from the use of primer outside of the booth. [District Rule 2201]

{4940} Daily PM10 emissions of each coating and/or primer applied shall be calculated as follows: daily PM10 emissions of each coating and/or primer applied = coating and/or primer density (lb/gallon) x coating and/or primer solids content (% by weight) x usage (gallons/day) x control efficiency factor.  Control efficiency factor is 0.25 for primers applied outside the booth, and 0.0125 for coating and/or primers applied inside the booth.  Total daily PM10 emissions is the sum of PM10 emissions from all coating and/or primers applied. [District Rule 2201]

{4244} Records shall be retained on-site for a minimum of five years and made available for District inspection upon request. [District Rules 2201 and 4612]

###

1. The natural gas price used is based on the average of the California industrial natural gas price over 12 months (May 2016 through April 2017) as published by the U.S. Energy Information Administration in their latest monthly natural gas report. See <http://tonto.eia.doe.gov/dnav/ng/hist/n3035ca3m.htm> [↑](#footnote-ref-1)