SMAQMD BACT CLEARINGHOUSE

CATEGORY Type: **ASPHALT PLANT**

BACT Category: Minor Source

BACT Determination Number: 293	**BACT Determination Date:** 6/22/2022

Equipment Information

Permit Number: N/A -- Generic BACT Determination

Equipment Description: Material Handling, Storage, Stockpiles & Loadout

Unit Size/Rating/Capacity: All

Equipment Location:

EXPIRED

BACT Determination Information

District Contact: Felix Trujillo, Jr. Phone No.: (279)207-1154 email: ftrujillo@airquality.org

ROCs	**Standard:**	
	Technology Description:	See BACT #293 evaluation for requirements.
	Basis:	Achieved in Practice
NOx	**Standard:**	33 ppmvd @ 3% O2
	Technology Description:	
	Basis:	Achieved in Practice
SOx	**Standard:**	
	Technology Description:	See BACT #293 evaluation for requirements.
	Basis:	Achieved in Practice
PM10	**Standard:**	
	Technology Description:	See BACT #293 evaluation for requirements.
	Basis:	Achieved in Practice
PM2.5	**Standard:**	
	Technology Description:	See BACT #293 evaluation for requirements.
	Basis:	Achieved in Practice
CO	**Standard:**	400 ppmvd @ 3% O2
	Technology Description:	
	Basis:	Achieved in Practice
LEAD	**Standard:**	
	Technology Description:	
	Basis:	

Comments: T-BACT is equivalent to BACT. This BACT determination is for drum mix and batch mix asphalt plants.

The use of an afterburner is technologically feasible. The cost effectiveness analysis shall be performed as part of the specific project.

Printed: 6/22/2022

777 12th Street, Suite 300

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Sacramento, CA 95814

BEST AVAILABLE CONTROL TECHNOLOGY & TOXIC BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION

EXPIRED

DETERMINATION NO.: 293

DATE: June 22, 2022

ENGINEER: Felix Trujillo, Jr.

Category/General Equip Description: Asphalt Batch Plant - Natural Gas or LPG

Equipment Specific Description: Material Handling, Storage, Stockpiles & Loadout

Equipment Size/Rating: Minor Source

Previous BACT Det. No.: 194

This BACT/T-BACT determination will be made for a hot mix asphalt (HMA) batch plant. This BACT/T-BACT determination will update BACT Determination #194 which was made on 9/7/2018. This BACT will only apply to minor sources. BACT Determination #194 applied only to drum mix asphalt plants, since the Bay Area Air Quality Management District (BAAQMD) and San Joaquin Valley Air Pollution Control District (SJVAPCD) also had separate BACTs for drum mix and batch mix plants. There are two categories of HMA facilities: drum mix and batch mix. There are differences in equipment for these two types of plants. The main difference being that in the batch mix process, the aggregate, asphalt cement and recycled asphalt product (RAP) are mixed in a pugmill. For drum mix, the aggregate, asphalt cement and RAP are mixed within the drum. The SJVAPCD updated their asphalt plant BACT on 8/23/18 and applied it to drum mix and batch mix plants. The BAAQMD has established BACT guidelines for each type of asphalt plant. The NOx standard for both plants is the same (12 ppmvd @ 15% O_2) with the only difference being in the CO emissions (265 ppmv @ 15% O_2 for batch mix and 133 ppmv @ 15% O_2 for drum mix (equivalent to 400 ppmv @ 3% O_2)). The SJVAPCD BACT applied a CO standard of 42 ppmvd @ 19% O_2 (equivalent to 400 ppmvd @ 3% O_2) to batch mix and drum mix plants, which sets the BACT CO standard for asphalt plants. Therefore, this BACT will apply to drum mix and batch mix plants.

In general, hot mix asphalt plants consist of aggregate stockpiles, cold feed aggregate bins, aggregate conveyors, scalping screen (screen used to scalp the oversized material from the batching process), RAP feed hopper and conveyors, asphalt cement storage tank, oil heater, rotary drum mixer with burner, baghouse, drag slat conveyor (enclosed conveyor that transfers the asphaltic concrete mixture to the storage silos), hot mix asphalt storage tank and truck loadout. The batch mix plant includes a bucket elevator, hot screens, hot bins, mixer (pug mill) and truck loadout.

BACT ANALYSIS

A: ACHIEVED IN PRACTICE (Rule 202, §205.1a):

The following control technologies are currently employed as BACT for hot mix asphalt batch plants and are listed as Achieved in Practice:

US EPA

BACT
Source: EPA RACT/BACT/LAER Clearinghouse
None

A search of the EPA BACT Clearinghouse was performed using the default search period of 10 years (1/1/11) for asphalt concrete manufacturing (Process 90.003). There were no results found.

RULE REQUIREMENTS:
40 CFR 60 Subpart I – Standards of Performance for Hot Mix Asphalt Facilities

This regulation applies to a hot mix asphalt facility that commenced construction or modification after June 11, 1973. This regulation applies to all types of hot mix asphalt plants.

This regulation sets a particulate matter standard of 0.04 gr/dscf.

California Air Resources Board (CARB)

BACT
Source: ARB Technology Clearinghouse

The California Air Resources Board (CARB) has updated their BACT Clearinghouse and is now known as the Technology Clearinghouse. A search of the Technology Clearinghouse was performed and only the BAAQMD, SJVAPCD and SCAQMD included BACTs for asphalt concrete manufacturing. The BACTs listed are the same BACTs identified under the BACT section of each District in this document.

RULE REQUIREMENTS:
None

Sacramento Metropolitan AQMD

BACT
Source: SMAQMD BACT Clearinghouse

Drum Mix Asphalt Batch Plant (9/7/18)	
VOC	Dryer: Natural gas or LPG as a primary fuel; Post Dryer: a) Conveyors and storage silos enclosed and abated by a blue smoke recovery/capture system (enclosure and vented to the rotary-dryer burner) or vented to a blue smoke filter pack b) Truck Loadout operations enclosed on three sides (tunnel) and vented to 1) rotary-dryer burner or 2) blue smoke filter pack; Asphalt cement storage tanks: Cool gases to < 120° F and vent to a fiberglass or steel wool filter
NOx	≤ 36 ppmvd @ 3% O_2
SOx	Dryer: PUC quality natural gas or LPG as a primary fuel
PM10	Dryer: 0.01 gr/dscf Pre Dryer: Conveyors, transfer points, screen and stockpiles served by water sprays as necessary to show compliance with 20% opacity. Post Dryer: a) Conveyors and storage silos enclosed and abated by a blue smoke recovery/capture system (enclosure and vented to rotary-dryer burner) or vented to a blue smoke filter pack b) Truck Loadout operations enclosed on three sides (tunnel) and vented to 1) rotary-dryer burner or 2) blue smoke filter pack
PM2.5	Same control technology as PM10 (A)
CO	Dryer: ≤ 400 ppmvd @ 3% O_2

(A) This is listed as Technologically Feasible.

RULE REQUIREMENTS:

Rule 419 – NOx from Miscellaneous Combustion Units (Amended 10-25-18)

This rule applies to any miscellaneous combustion unit or cooking unit with a total rated heat input capacity of 2 million Btu per hour or greater that is located at a major stationary source of NOx and to any miscellaneous combustion unit or cooking unit with a total rated heat input capacity of 5 million Btu per hour or greater that is not located at a major stationary source of NOx. The NOx and CO emission limits for asphalt manufacturing operations are summarized in the following table.

TABLE 1: MISCELLANEOUS COMBUSTION UNITS EMISSION LIMITS EXPRESSED AS PPMV @ 3% O_2		
Equipment Category	**NOx Limit ppmv @ 3% O_2 (lb/MMBtu)**	**CO Limit ppmv @ 3% O_2 (lb/MMBtu)**
Gaseous Fuel-Fired Equipment	40 (0.49)	400 (0.30)
Asphalt Manufacturing Operation		

South Coast AQMD

BACT
Source: SCAQMD BACT Guidelines for Non-Major Polluting Facilities, page 7 (10/20/2000)

Hot Mix Asphalt Plant (A)	
VOC	No standard
NOx	Natural gas with low NOx burner ≤ 33 ppmvd @ 3% O_2
SOx	No standard
PM10	Baghouse
PM2.5	No standard
CO	No standard

(A) This determination does not specify the type of asphalt plant. But the standards listed would apply to drum mix and batch mix type of plants, since only NOx and PM10 emissions exhausting from the rotary drum are listed.

RULE REQUIREMENTS:

Rule 1147 – NOx Reductions from Miscellaneous Sources (Amended 7-7-17)

This rule sets a NOx emission limit of 40 ppm @ 3% O_2 for asphalt manufacturing operations with a process temperature of less than 1,200 degrees Fahrenheit and fired on gaseous fuels. This rule applies to Asphalt Manufacturing Operation Heaters rated ≥ 325,000 BTU/hour, fired on natural gas or liquid fuel.

Rule 1157 – PM10 Emission Reductions from Aggregate and Related Operations (Amended 9-8-06)

This rule limits fugitive dust into the atmosphere from aggrate equipment to 20% opacity through the use of dust suppressing equipment. The rule allows the use of water spray equipment on conveyors, screens and storage piles in order to meet such limit.

San Diego County APCD

BACT
Source: NSR Requirements for BACT

The SDCAPCD does not have a BACT determination for this source category listed.

RULE REQUIREMENTS:
None

Bay Area AQMD

BACT
Source: BAAQMD BACT Guideline Document 10A.1 (3/6/01)

Asphalt (Hot Mix) Drum Mix Facilities - Dryer	
VOC	No standard
NOx	12 ppmvd @ 15% O_2 (equivalent to 36 ppmvd @ 3% O_2)
SOx	Natural gas
PM10	≤ 0.01 gr/dscf
PM2.5	No standard
CO	133 ppmvd @ 15% O_2 (equivalent to 400 ppmvd @ 3% O_2)

Source: BAAQMD BACT Guideline Document 10.1 (6/28/00)

Asphalt (Hot Mix) Batch Mix Facilities	
VOC	0.03 lb/ton asphaltic concrete produced (A)
NOx	12 ppmvd @ 15% O_2 (equivalent to 36 ppmvd @ 3% O_2)
SOx	Natural gas
PM10	≤ 0.01 gr/dscf
PM2.5	No standard
CO	265 ppmvd @ 15% O_2 (equivalent to 795 ppmvd @ 3% O_2)

(A) AP-42 Table 11.1-6 lists a lower emission factor (0.0082 lb/ton) for batch mix plants. Therefore, this standard will not be considered under this BACT determination.

Source: BAAQMD BACT Guideline Document 10.2 (8/12/91)

Asphalt Batch Plant – Material Handling	
VOC	No standard
NOx	No standard
SOx	No standard
PM10	Water spray w/chemical suppressants of materials on conveyors, transfer points, storage piles, and site road surfaces; Enclosure of size reduction and classification equipment and vent to a baghouse w/ ≤0.01 gr/dscf (A)
PM2.5	No standard
CO	No standard

(A) This BACT guideline has not been revised since 1991. George Reed, Inc. and Granite Construction were contacted about the use of chemical surfactants potentially being introduced into the dryer. Both facilities had concerns that the introduction of such chemicals may interfere with the specs of the asphalt. The CALTRANS specification document (Section 39 Asphalt Concrete 6/5/09) states the aggregate must be clean and free from deleterious substances. The BAAQMD required the use of a baghouse on a scalping screen from an asphalt plant based on another BACT guideline. Therefore, this BACT will not be referenced for material handling equipment.

Source: BAAQMD BACT Guideline Document 10B.1 (8/1/12)

Asphalt (Hot Mix) Drum and Batch Mix Facilities, Asphalt Material Handling (Conveyors and Storage Silos; and Loadout Operations)	
VOC	a) Conveyors and storage silos enclosed and abated by a blue smoke recovery/capture system or vented to a blue smoke filter pack b) Truck Loadout operations enclosed on three sides (tunnel) and vented to 1) rotary-dryer burner or 2) blue smoke filter pack
NOx	No standard
SOx	No standard
PM10	Same as VOC
PM2.5	No standard
CO	No standard

Source: BAAQMD BACT Guideline Document 12.1 (11/8/91)

Asphalt Storage Tank	
VOC	No standard
NOx	No standard
SOx	No standard

Asphalt Storage Tank	
PM10	Cool gases to < 120 °F and vent to a fiberglass or steel wool filter
PM2.5	No standard
CO	No standard

The BAAQMD has a BACT trigger level of 10 lb/day.

RULE REQUIREMENTS:
None

San Joaquin Valley Unified APCD

BACT
Source: SJVUAPCD BACT Guideline 6.3.1 (Last Update 8-23-18)

Asphaltic Concrete – Mix Plant	
VOC	Enclosed hot mix silos and loadout operation vented to rotary dryer burner
NOx	3.5 ppmv @ 19% O_2 using Low-NOx burner and either natural gas or LPG as primary fuel (equivalent to 33 ppmvd @ 3% O_2)
SOx	Natural gas of LPG as primary fuel
PM10	Rotary drum vented to fabric collector or venturi scrubber with centrifugal separator; enclosed conveyors, hot mix storage silos, two sided truck loadout; all vented to dryer or electrostatic precipitator or filter; and natural gas or LPG as a primary fuel
PM2.5	No standard
CO	42 ppmv @ 19% O_2 using and either natural gas or LPG as primary fuel (equivalent to 400 ppmvd @ 3% O_2)

The SJVAPCD BACT trigger level is 2 lb/day.

RULE REQUIREMENTS:

Rule 4309 – Dryers, Dehydrators, and Ovens (Adopted 12-15-05)

This rule applies to gaseous fired dryers with a rating of 5.0 MMBtu/hr or greater. The rule sets a NOx limit of 4.3 ppm @ 19% O_2 (equivalent to 40 ppmvd @ 3% O_2) and CO limit of 42 ppmv @ 3% O_2 (equivalent to 400 ppmvd @ 3% O_2) for asphalt plants.

The following control technologies have been identified and are ranked based on stringency:

SUMMARY OF ACHIEVED IN PRACTICE CONTROL TECHNOLOGIES	
VOC	Rotary Dryer: 1. Natural gas or LPG as primary fuel, SMAQMD (drum mix) Post Dryer: A. Conveyors and storage silos 1. enclosed and abated by a blue smoke recovery/capture (enclosure and vented to a rotary-dryer buner) or vented to a blue smoke filter pack, SMAQMD (drum mix), BAAQMD (drum mix and batch mix), SJVAPCD (drum mix and batch mix) B. Truck Loadout 1. Enclosed on three sides (tunnel) and vented to 1) rotary-dryer burner or 2) blue smoke filter pack, SMAQMD (drum mix), BAAQMD (drum mix, batch mix), SJVAPCD (drum mix, batch mix) Asphalt Cement Storage Tanks: 1. Cool gases to < 120° F and vent to a fiberglass or steel wool filter, SMAQMD (drum mix), BAAQMD (drum mix, batch mix)
NOx	1. 33 ppm at 3% O_2, SCAQMD (drum mix, batch mix), SJVAPCD (drum mix, batch mix) 2. 36 ppmvd at 3% O_2, SMAQMD (drum mix), BAAQMD (drum mix, batch mix)
SOx	1. PUC quality natural gas or LPG as a primary fuel, SMAQMD (drum mix), BAAQMD (drum mix, batch mix), SJVAPCD (drum mix, batch mix)
PM10	Dryer: 1. 0.01 gr/dscf, SMAQMD (drum mix), BAAQMD (drum mix, batch mix) Pre Dryer: 1. Conveyors, transfer points, screen and stockpiles served by water sprays as necessary to show compliance with 20% opacity, SMAQMD (drum mix) Post Dryer: A. Conveyors and storage silos 1. enclosed and abated by a blue smoke recovery/capture (enclosure and vented to a rotary-dryer buner) or vented to a blue smoke filter pack, SMAQMD (drum mix), BAAQMD (drum mix, batch mix), SJVAPCD (drim mix, batch mix) B. Truck Loadout 1. Enclosed on three sides (tunnel) and vented to 1) rotary-dryer burner or 2) blue smoke filter pack, SMAQMD (drum mix), BAAQMD (drim mix, batch mix), SJVAPCD (drum mix, batch mix)
PM2.5	No Standard
CO	1. 400 ppm at 3% O_2, SCAQMD (drum mix, batch mix), SJVAPCD (drum mix, batch mix), SMAQMD (drum mix), BAAQMD (drum mix, batch mix)

The following control technologies have been identified as the most stringent, achieved in practice control technologies:

BEST CONTROL TECHNOLOGIES ACHIEVED		
Pollutant	**Standard**	**Source**
VOC	Rotary Dryer: Natural gas or LPG as a primary fuel; Post Dryer: a) Conveyors and storage silos enclosed and abated by a blue smoke recovery/capture system (enclosure and vented to the rotary-dryer burner) or vented to a blue smoke filter pack b) Truck Loadout operations enclosed on three sides (tunnel) and vented to 1) rotary-dryer burner or 2) blue smoke filter pack; Asphalt cement storage tanks: Cool gases to < 120° F and vent to a fiberglass or steel wool filter (A)	SMAQMD, SJVAPCD, BAAQMD
NOx	Rotary Dryer: ≤ 33 ppmvd @ 3% O_2	SCAQMD, SJVAPCD
SOx	Rotary Dryer: PUC quality natural gas or LPG as a primary fuel	SMAQMD, BAAQMD, SJVAPCD
PM10	Rotary Dryer: 0.01 gr/dscf Pre Dryer: Conveyors, transfer points, screen and stockpiles served by water sprays as necessary to show compliance with 20% opacity. Post Dryer: a) Conveyors and storage silos enclosed and abated by a blue smoke recovery/capture system (enclosure and vented to rotary-dryer burner) or vented to a blue smoke filter pack b) Truck Loadout operations enclosed on three sides (tunnel) and vented to 1) rotary-dryer burner or 2) blue smoke filter pack	SMAQMD, BAAQMD, SJVAPCD
PM2.5	Same as PM10 (B)	
CO	Rotary Dryer: ≤ 400 ppmvd @ 3% O_2	SMAQMD, BAAQMD, SJVAPCD

(A) The storage tank heater is covered under a separate BACT category (Boilers/Heaters).
(B) Since PM2.5 is a subset of PM10, the listed standards and technologies listed for PM10 should also be an effective control for PM2.5. Therefore, these standards and technologies will also be deemed achieved in practice for PM2.5.

B. TECHNOLOGICALLY FEASIBLE AND COST EFFECTIVE (Rule 202, §205.1.b.):

Technologically Feasible Alternatives:

Any alternative basic equipment, fuel, process, emission control device or technique, singly or in combination, determined to be technologically feasible by the Air Pollution Control Officer.

The table below shows the technologically feasible alternatives identified as capable of reducing emissions beyond the levels determined to be "Achieved in Practice" as per Rule 202, §205.1.a.

Pollutant	Technologically Feasible Alternatives
VOC	Afterburner
NOx	Not applicable
SOx	Not applicable
PM10	Afterburner (A)
PM2.5	Same as PM10
CO	Not applicable

(A) The BAAQMD BACT Guideline 10B.1 (8/1/12), lists the use of an afterburner as technologically feasible. However, there is no control efficiency listed for PM10 control. According to the EPA's Air Pollution Control Fact Sheet for Thermal Incinerators (https://www3.epa.gov/ttnchie1/mkb/documents/fthermal.pd), controlled emissions and/or efficiency test data for PM in incinerators are generally not available. The use of an afterburner is also listed as technologically feasible for VOC control with no control efficiency listed. But in general, a control efficiency of 98% is used for the VOC control. In order to perform the cost-effeciveness analysis, a control efficiency will be required. The District can always assume 100% control for worst case purposes. For the VOC control, this methodology would be reasonable, but for PM10 control it may not be reasonable. Therefore, the use of an afterburner will not be considered as a technologically feasible control for PM10 under this BACT determination.

Cost Effectiveness Analysis Summary

A review of the Districts permitted asphalt plants did not show a standard VOC emission factor used for the asphalt plants. In general, the District has established thresholds/caps on BACT determinations that define when teachnologically feasible controls are cost effective. Due to the variability in the VOC emission factor, the District will not place such a threshold/cap on this BACT detemination. Therefore, the cost effectiveness process for the use of an afterburner will be performed as part of the individual project and for each Authority to Construct associated with the project. This same practice is performed by the BAAQMD and SJVAPCD.

C. SELECTION OF BACT:

Minor source BACT for a hot mix asphalt batch plant is the following:

BACT FOR HOT MIX ASPHALT BATCH PLANT		
Pollutant	**Standard**	**Source**
VOC	Rotary Dryer: Natural gas or LPG as a primary fuel; Post Rotary Dryer: a) Conveyors and storage silos enclosed and abated by a blue smoke recovery/capture system (enclosure and vented to the rotary-dryer burner) or vented to a blue smoke filter pack b) Truck Loadout operations enclosed on three sides (tunnel) and vented to 1) rotary-dryer burner or 2) blue smoke filter pack; Asphalt cement storage tanks: Cool gases to < 120° F and vent to a fiberglass or steel wool filter (A)	SMAQMD, SJVAPCD, BAAQMD (Achieved in Practice)
	Afterburner serving rotary dryer (B)	Technologically Feasible - BAAQMD
NOx	Rotary Dryer: ≤ 33 ppmvd @ 3% O_2	SCAQMD, SJVAPCD (Achieved in Practice)
SOx	Rotary Dryer: PUC quality natural gas or LPG as a primary fuel	SMAQMD, SJVAPCD (Achieved in Practice)
PM10	Rotary Dryer: 0.01 gr/dscf Pre Rotary Dryer: Conveyors, transfer points, screen and stockpiles served by water sprays as necessary to show compliance with 20% opacity. Post Rotary Dryer: a) Conveyors and storage silos enclosed and abated by a blue smoke recovery/capture system (enclosure and vented to rotary-dryer burner) or vented to a blue smoke filter pack b) Truck Loadout operations enclosed on three sides (tunnel) and vented to 1) rotary-dryer burner or 2) blue smoke filter pack	SMAQMD, BAAQMD, SCAQMD (Achieved in Practice)

BACT FOR HOT MIX ASPHALT BATCH PLANT		
Pollutant	**Standard**	**Source**
PM2.5	Same as PM10	
CO	Rotary Dryer: ≤ 400 ppmvd @ 3% O_2	SMAQMD, BAAQMD, SJVAPCD

(A) The storage tank heater is covered under a separate BACT category (Boilers/Heaters).
(B) The technologically feasible categories will be addressed under the specific projects on a case-by-case basis. If this technology is cost-effective, then it will be required.

D. SELECTION OF T-BACT:

There are no Federal NESHAP's nor State ATCM's for this source category. There is an applicable NSPS (40 CFR Subprat I – Hot Mix Asphalt Facilities) that sets a particulate matter standard of 0.04 gr/dscf and opacity limitation of 20 percent for asphalt plants. BAAQMD BACT Documents 10A.1 (Drum Mix – 3/6/21) and 10.1 (Batch Mix – 6/28/00) list T-BACT as being the use of an afterburner. The District contacted the BAAQMD and asked if they had required this as T-BACT. They were unable to identify any projects that required this control as T-BACT. In addition, BAAQMD BACT 10B.1 (Drum Mix/Batch Mix Conveyors, Storage Silos and Truck Loadout) list the use of an afterburner as technologically feasible but did not list it as T-BACT. The District will not require the use of an afterburner as T-BACT. Therefore, T-BACT standards will be considered as meeting the PM10 and/or VOC standards identified above, as applicable.

APPROVED BY: *Brian F Krebs* **DATE:** 06-22-2022

Attachment A

Review of BACT Determinations

ACTIVE SMAQMD BACT CLEARINGHOUSE

CATEGORY: **ASPHALT PLANT**

BACT Size: Minor Source BACT **ASPHALT PLANT**

BACT Determination Number: 194	**BACT Determination Date:** 9/7/2018

Equipment Information

Permit Number: 25615
Equipment Description: ASPHALT PLANT
Unit Size/Rating/Capacity: 140 MMBtu/hr
Equipment Location: GEORGE REED, INC.
900 W. ELKHORN BLVD
RIO LINDA, CA

EXPIRED

BACT Determination Information

ROCs	**Standard:**	
	Technology Description:	See BACT #194 evaluation for requirements
	Basis:	Achieved in Practice
NOx	**Standard:**	<= 36 ppmvd @ 3% O2
	Technology Description:	
	Basis:	Achieved in Practice
SOx	**Standard:**	
	Technology Description:	PUC quality natural gas or LPG as a primary fuel
	Basis:	Achieved in Practice
PM10	**Standard:**	
	Technology Description:	See BACT #194 evaluation for requirements
	Basis:	Achieved in Practice
PM2.5	**Standard:**	
	Technology Description:	See BACT #194 evaluation for requirements
	Basis:	
CO	**Standard:**	<=400 ppmvd @ 3% O2
	Technology Description:	
	Basis:	Achieved in Practice
LEAD	**Standard:**	
	Technology Description:	
	Basis:	

Comments: T-BACT is equivalent to BACT. This BACT determination is for a drum mix hot mix asphalt plant.

District Contact: Felix Trujillo Phone No.: (916) 874 - 7357 email: ftrujillo@airquality.org

Printed: 9/7/2018

A detailed calculation of the cost effectiveness for VOC removal with a baghouse is shown in Appendix A. As shown above, the cost of an afterburner is greater than $17,500 per ton of VOCs reduced and therefore not cost effective.

C. SELECTION OF BACT:

Minor source and small emitter BACT (< 10 lb/day) for a drum mix asphalt batch plant is the following:

BACT FOR DRUM MIX ASPHALT BATCH PLANT		
Pollutant	**Standard**	**Source**
VOC	Dryer: Natural gas or LPG as a primary fuel; Post Dryer: a) Conveyors and storage silos enclosed and abated by a blue smoke recovery/capture system (enclosure and vented to the rotary-dryer burner) or vented to a blue smoke filter pack b) Truck Loadout operations enclosed on three sides (tunnel) and vented to 1) rotary-dryer burner or 2) blue smoke filter pack; Asphalt cement storage tanks: Cool gases to < 120° F and vent to a fiberglass or steel wool filter	SJVAPCD, BAAQMD
NOx	Dryer: ≤ 36 ppmvd @ 3% O_2	SCAQMD, BAAQMD, SJVAPCD
SOx	Dryer: PUC quality natural gas or LPG as a primary fuel	SJVAPCD
PM10	Dryer: 0.01 gr/dscf Pre Dryer: Conveyors, transfer points, screen and stockpiles served by water sprays as necessary to show compliance with 20% opacity. Post Dryer: a) Conveyors and storage silos enclosed and abated by a blue smoke recovery/capture system (enclosure and vented to rotary-dryer burner) or vented to a blue smoke filter pack b) Truck Loadout operations enclosed on three sides (tunnel) and vented to 1) rotary-dryer burner or 2) blue smoke filter pack	BAAQMD, SCAQMD
PM2.5	Same as PM10	Technologically Feasible
CO	Dryer: ≤400 ppmvd @ 3% O_2	BAAQMD, SJVAPCD

San Joaquin Valley
Unified Air Pollution Control District

Best Available Control Technology (BACT) Guideline 6.3.1*

Last Update: 8/23/2018

Asphaltic Concrete - Mix Plant

Pollutant	Achieved in Practice or contained in the SIP	Technologically Feasible	Alternate Basic Equipment
VOC	Enclosed hot mix silos and loadout operation vented to rotary dryer burner		
SOx	Natural gas or LPG as primary fuel		
PM10	Rotary drum vented to fabric collector or Venturi scrubber with centrifugal separator; enclosed conveyors, hot mix storage silos, two sided truck loadout; all vented to dryer or electrostatic precipitator or filter; and natural gas or LPG as a primary fuel		
NOx	3.5 ppmv @ 19% O2 using Low-NOx burner and either natural gas or LPG as primary fuel		
CO	42 ppmv @ 19% O2 using and either natural gas or LPG as primary fuel		

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in a State Implementation Plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is required for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

***This is a Summary Page for this Class of Source**

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guideline

Source Category

Source:	*Hot MIx Asphalt, Drum Mix Facilities*	Revision:	*1*
		Document #:	*10A.1*
Class:	*All*	Date:	*03/06/01*

Determination

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
POC	1. *Afterburner w/ ≥0.3 sec. retention time at ≥1400°F*[a,T] 2. *n/s*	1. *BAAQMD Approved Design and Operation*[a] 2. *Good Combustion Practice*[a]
NOx	1. *n/d* 2. *12 ppmv @15% O_2 Dry*[a,b,c]	1. *n/d* 2. *Natural Gas + Low NOx Combustion System*[a,b,c]
SO_2	1. *n/d* 2. *Natural gas*[a,b,c]	1. *n/d* 2. *Fuel Selection*[a,b,c]
CO	1. *n/d* 2. *133 ppmv @ 15% O_2 Dry*[a,b,c]	1. *n/d* 2. *Good Combustion Practice*[a,c]
PM_{10}	1. *n/d* 2. *≤0.01 gr/dscf*[a,T]	1. *n/d* 2. *Baghouse*[a,T]
NPOC	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*

References

a. BAAQMD
b. BACT is 12 ppmvd NOx @ 15% O_2 and 265 ppmvd CO @ 15% O_2 regardless of fuel. However, for special situations such as temporary operations and/or remote locations where natural gas is not available, liquefied petroleum gas or fuel oil ≤ 0.05 wt. % sulfur may be permitted to emit at higher levels as specified below:
1). "Temporary operations" using exclusively liquefied petroleum gas shall not remain at any single plant for a period in excess of 12 consecutive months, following the date of initial operation, and may be permitted up to 38 ppmvd NOx @ 15% $O_2$and 265 ppmvd CO @ 15% O_2. [Basis: Monterey Bay Unitied APCD A/C #10287]
2). "Temporary operations" using exclusively fuel oil ≤ 0.05 wt. % sulfur shall not remain at any single plant for a period in excess of 3 consecutive months, following the date of initial operation, and may be permitted up to 55 ppmvd NOx @ 15% O_2 and 265 ppmvd CO @ 15% O_2.[Basis: Reference a. above]
3). For remote locations where natural gas is not available, liquefied petroleum gas may be permitted up to 38 ppmvd NOx @ 15% O_2 and 265 ppmvd CO @ 15% O_2 and fuel oil ≤ 0.05 wt. % sulfur may be permitted up to 55 ppmvd NOx @ 15% O_2 and 265 ppmvd CO @ 15% O_2. [Basis: Monterey Bay APCD A/C #10287 and Reference a. above]
c. BAAQMD A #17860
T. TBACT

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guideline

Source Category

Source:	*Hot MIx Asphalt, Batch Mix Facilities*	Revision:	*4*
		Document #:	*10.1*
Class:	*All*	Date:	*06/28/00*

Determination

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
POC	1. *Afterburner w/ ≥0.3 sec. retention time at ≥1400°F* [a,T] 2. *0.03 pounds/ton asphaltic concrete produced* [b]	1. *BAAQMD Approved Design and Operation* [a,T] 2. *Good Combustion Practice* [b]
NOx	1. *n/d* 2. *12 ppmv @ 15% O_2 Dry [36 ppmv @ 3% O_2 Dry]* [c,d,e]	1. *n/d* 2. *Natural Gas + Low NOx Combustion System* [c,d,e]
SO_2	1. *n/d* 2. *Natural gas* [b]	1. *n/d* 2. *Fuel Selection* [b]
CO	1. *n/d* 2. *265 ppmv @ 15% O_2 Dry [795 ppmv @ 3% O_2 Dry]* [b,e]	1. *n/d* 2. *Good Combustion Practice* [b,e]
PM_{10}	1. *n/d* 2. *≤0.01 gr/dscf* [b,T]	1. *n/d* 2. *Baghouse* [b,T]
NPOC	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*

References

a. BAAQMD
b. BAAQMD A #17860
c. BAAQMD Interoffice Memorandum dated June 28, 2000 from B. Young to Bill deBoisblanc titled "Revised BACT Guideline for Asphalt Batch Plants".
d. March 15, 2000 from D. P. Van Buren, PE to Barry Young titled "New BACT for Asphalt Batch Plants".
e. BACT is 12 ppmvd NOx @ 15% O_2 and 265 ppmvd CO @ 15% O_2 regardless of fuel. However, for special situations such as temporary operations and/or remote locations where natural gas is not available, liquefied petroleum gas or fuel oil ≤ 0.05 wt. % sulfur may be permitted to emit at higher levels as specified below:
1). "Temporary operations" using exclusively liquefied petroleum gas shall not remain at any single plant for a period in excess of 12 consecutive months, following the date of initial operation, and may be permitted up to 38 ppmvd NOx @ 15% $O_2$and 265 ppmvd CO @ 15% O_2. [Basis: Monterey Bay Unitied APCD A/C #10287]
2). "Temporary operations" using exclusively fuel oil ≤ 0.05 wt. % sulfur shall not remain at any single plant for a period in excess of 3 consecutive months, following the

date of initial operation, and may be permitted up to 55 ppmvd NOx @ 15% O_2 and 265 ppmvd CO @ 15% O_2.[Basis: Reference a. above]
3). For remote locations where natural gas is not available, liquefied petroleum gas may be permitted up to 38 ppmvd NOx @ 15% O_2 and 265 ppmvd CO @ 15% O_2 and fuel oil ≤ 0.05 wt. % sulfur may be permitted up to 55 ppmvd NOx @ 15% O_2 and 265 ppmvd CO @ 15% O_2. [Basis: Monterey Bay APCD A/C #10287 and Reference a. above]
T. TBACT

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guideline

Source Category

Source:	*Asphalt Batch Plant (Material Handling)*	Revision:	*1*
		Document #:	*10.2*
Class:	*All*	Date:	*08/12/91*

Determination

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
POC	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
NOx	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
SO_2	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
CO	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
PM_{10}	1. *Enclosure of conveyors, transfer points, size reduction and classification equipment, and vent to baghouse(s) w/ ≤0.01 gr/dscf; Water spray w/ chemical suppressants of storage piles; Paving of site road surfaces*[a,b,T] 2. *Water spray w/ chemical suppressants of materials on conveyors, transfer points, storage piles, and site road surfaces; Enclosure of size reduction and classification equipment and vent to a baghouse w/≤0.01 gr/dscf*[a,b,T]	1. *BAAQMD Approved Design and Operation*[a] 2. *BAAQMD Approved Design and Operation*[a]
NPOC	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*

References

a. BAAQMD
b. BAAQMD A #5376 & #5841
T. TBACT

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Best Available Control Technology (BACT) Guideline

Source Category

Source:	***Hot Mix Asphalt, Drum and Batch Mix Facilities: Material Handling (Conveyors and Storage Silos; and Loadout Operations)***	**Revision:**	**1**
		Document #:	**10B.1**
Class:		**Date:**	**08/01/2012**

Determination

Pollutant	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
POC	1. Afterburner w/ >0.3 sec. retention time at > 1400F[a] 2. a) Conveyors and storage silos enclosed and abated by a blue smoke recovery/capture system or vented to a blue smoke filter pack.[b] b) Truck loadout operations enclosed on three sides (tunnel) and vented to 1) rotary-dryer burner or 2) blue smoke filter pack.[c]	1. BAAQMD Approved Design and Operation[a] 2. Blue smoke recovery/capture system (enclosure and vented to the rotary-dryer burner).[b] Blue smoke filter pack must be designed to capture both POC and PM10 (oils).
NOx	1. n/a 2. n/a	1. n/a 2. n/a
SO_2	1. n/a 2. n/a	1. n/a 2. n/a
CO	1. n/a 2. n/a	1. n/a 2. n/a
PM_{10}	1. Afterburner w/ >0.3 sec. retention time at > 1400F[a] 2. a) Conveyors and	1. BAAQMD Approve Design and Operation[a]

	storage silos enclosed and abated by a blue smoke recovery/capture system or vented to a blue smoke filter pack.[b] b) Truck loadout operations enclosed on three sides (tunnel) and vented to 1) rotary-dryer burner or 2) blue smoke filter pack.[c]	2. Blue smoke recovery/capture system (enclosure and vented to the rotary-dryer burner).[b] Blue smoke filter pack must be designed to capture both POC and PM10 (oils).
NPOC	1. n/a 2. n/a	1. n/a 2. n/a

References

a.	BAAQMD
b.	Applications 15524 and 15287, SJVUAPCD BACT Guideline 6.3.1, SBCAPCD BACT Determination for A/C no. 9886 and 9740.
c.	Applications 15287, SJVUAPCD BACT Guideline 6.3.1 and SCAQMD BACT Determination for Application 365181

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guideline

Source Category

Source:	*Asphalt Storage Tank*	Revision:	*1*
		Document #:	*12.1*
Class:	*All*	Date:	*11/08/91*

Determination

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice	TYPICAL TECHNOLOGY
POC	1. *n/d* 2. *n/d*	1. *n/d* 2. *n/d*
NOx	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
SO_2	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
CO	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*
PM_{10}	1. *n/d* 2. *Cool gases to <120°F and vent to a fiberglass or steel wool filter*	1. *n/d* 2. *BAAQMD Approved Design and Operation*[b]
NPOC	1. *n/a* 2. *n/a*	1. *n/a* 2. *n/a*

References

b. BAAQMD

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0

Equipment or Process: Asphalt Batch Plant

	Criteria Pollutants					
Rating/Size	**VOC**	**NOx**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
All		Natural Gas with Low NOx Burner ≤ 33 ppmvd @ 3% O_2 (10-20-2000)			Baghouse (1990)	