

**Bay Area Air Quality Management District**

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**Permit Evaluation  
and  
Statement of Basis  
for  
Minor Revision of  
Major Facility Review Permit**

for

**AB&I Foundry  
Facility #A0062**

**Facility Address:**  
7825 San Leandro Street  
Oakland, CA 94621

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May 2014

Application # 24311

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## **Title V Statement of Basis**

### **A. Background**

This facility is subject to the Operating Permit requirements of Title V of the federal Clean Air Act, Part 70 of Title 40 of the Code of Federal Regulations (CFR), and BAAQMD Regulation 2, Rule 6, Major Facility Review because it is a major facility as defined by BAAQMD Regulation 2-6-212. It is a major facility because it has the “potential to emit” (as defined by BAAQMD Regulation 2-6-218) more than 100 tons per year of carbon monoxide. It is also a major facility because it has the potential to emit more than 25 tons per year of combined HAPs.

Major Facility Review permits (Title V permits) must meet specifications contained in 40 CFR Part 70 as delineated in BAAQMD Regulation 2, Rule 6. The permits must contain all “applicable requirements” (as defined in BAAQMD Regulation 2-6-202), including emission limits and standards, monitoring requirements, recordkeeping requirements, and reporting requirements. The permit holders must submit reports of all required monitoring at least every six months and compliance certifications at least every year.

Pursuant to Regulation 2-6-416, the District has reviewed the terms and conditions of AB&I’s Major Facility Review permit for the renewal of the permit in the same way as an application for an initial Major Facility Review permit. This review includes an analysis of applicability determinations for all sources, including those that have been modified or permitted since the issuance of the initial Major Facility Review permit. The review also includes an assessment of all monitoring in the permit for sufficiency to determine compliance.

In the Bay Area, State and District requirements are also “applicable requirements” and are included in the permit. These requirements can be federally enforceable or non-federally enforceable. All applicable requirements are contained in Sections I through VI of the permit.

Each facility in the Bay Area is assigned a facility identifier that consists of a letter and a 4-digit number. This identifier is also considered to be the identifier for the permit. The identifier for this facility is A0062.

The facility changed its name from American Brass & Iron Foundry to AB&I Foundry and it no longer processes brass.

This facility received its initial Title V permit on March 5, 2002. The permit was renewed on April 13, 2012. This application is for a minor permit revision to incorporate new sources and abatement equipment that have occurred since the permit renewal. The standard sections of the permit have been updated to include new standard language used in all Title V permits. The proposed permit shows all changes to the permit in strikeout/underline format.

This Title V minor revision includes the following applications:

**Table 1: Permit Applications included in this Title V permit**

<b>Application Number(s) (Title V/New Source Review (NSR))</b>	<b>Description</b>
NSR #24156	<b>A-36 Mist Eliminator</b> was added to abate sources S-34, S-35, and S-36 Pipe Finishing Dip Tanks to abate odors to operate in parallel with the existing A-35 Fiber Bed Mist Collector for the abatement of odors from their pipe coating operation. Condition # 24639 was amended to include A-36 as an abatement device for the coating sources.
NSR # 24761	<b>S-52 No-Bake Molding System</b> was added and <b>Condition #25437</b> was added.
NSR # 24310	Previously exempt grandfathered sources ( <b>S-7, S-8, S-9, S-10 Automatic Pouring Furnaces and S-14 Fittings Dip Barrel</b> ) lost their exemption and were added as permitted sources. In addition, grandfathered sources ( <b>S-46 Sand Storage Bunkers, S-47 Storage Piles, and S-50 Slurry Mix Stations</b> ) which were inadvertently excluded from their source list were added as permitted sources too.
NSR # 24553	<b>S-2 Cupola, S-2 Pouring, Cooling, Shakeout and S-3 Sand Preparation</b> were altered in 2006. As a result, Conditions # 9351 for S-1 and # 23650 for S-2 were amended. Additional exempt sources and one new coating operation ( <b>S-51 Specialty Finishing Paint Dip Tanks</b> ) and its related permit condition were added.
NSR # 26151	Exempt <b>S-61 Pipe Casting Machine P-4</b> was replaced and added to the list of exempt sources.

All of the above applications are minor revisions and administrative changes that correct and reflect AB&I operations such as adding sources, adding abatement equipment, and adding throughput limits to reflect maximum operating capacity of the equipment. None of the above applications resulted in emissions increases with the exception of NSR # 24761 and NSR #24553, which were offset by prior contemporary emission reductions credit. Furthermore, the revisions do not involve a relaxation of any applicable monitoring, reporting, or recordkeeping condition.

**B. Facility Description**

AB&I Foundry is a grey iron foundry for the production of cast iron in the manufacturing of pipe and fittings. Iron scrap is melted in a cupola furnace by burning coke, limestone is added as a flux to remove impurities, and silicon carbide is added as needed to alter the composition. The molten metal is transferred to an electric induction holding furnace before being poured into molds. For fittings and custom castings, the molten metal is poured into greensand molds, allowed to cool and harden, and then removed from the sand molds during shakeout. The castings are then conveyed to grinding and finishing where burrs and other excess metal are removed. The pipe fittings are then coated to prevent corrosion.

For pipes, the molten metal is poured into a permanent mold centrifugal casting machine as the machine rotates about its axis. The molten metal is thrown towards the inside mold wall, where it solidifies after cooling. As with the castings, excess metal is removed during grinding. The pipes are then dipped into asphalt to prevent corrosion and labeled.

## C. Permit Content

The legal and factual basis for the permit follows. The permit sections are described in the order presented in the permit.

### I. Standard Conditions

This section contains administrative requirements and conditions that apply to all facilities. If the Title IV (Acid Rain) requirements for certain fossil-fuel fired electrical generating facilities or the accidental release (40 CFR § 68) programs apply, the section will contain a standard condition pertaining to these programs. Many of these conditions derive from 40 CFR § 70.6, Permit Content, which dictates certain standard conditions that must be placed in the permit. The language that the District has developed for many of these requirements has been adopted into the BAAQMD Manual of Procedures, Volume II, Part 3, Section 4, and therefore must appear in the permit.

The standard conditions also contain references to BAAQMD Regulation 1 and Regulation 2. These are the District's General Provisions and Permitting rules.

#### Changes to permit:

- The dates of adoption and approval of rules in Standard Condition 1.A have been updated.
- Removed from Standard Condition 1.G the use of Compliance Certification Forms because the District no longer generates them.
- The typo in Standard Condition I.B.12 was fixed.

### II. Equipment

This section of the permit lists all permitted or significant sources. Each source is identified by an S and a number (e.g., S-24).

Permitted sources are those sources that require a BAAQMD operating permit pursuant to BAAQMD Rule 2-1-302.

Significant sources are those sources that have a potential to emit of more than 2 tons per year of a "regulated air pollutant" (as defined in BAAQMD Rule 2-6-222) or 400 pounds per year of a "hazardous air pollutant" (as defined in BAAQMD Rule 2-6-210).

All abatement (control) devices that control permitted or significant sources are listed. Each abatement device whose primary function is to reduce emissions is identified by an A and a number (e.g., A-24). If a source is also an abatement device, such as when an engine controls VOC emissions, it will be listed in the abatement device table but will have an "S" number. An abatement device may also be a source (such as a thermal oxidizer that burns fuel) of secondary emissions. If the primary function of a device is to control emissions, it is considered an abatement (or "A") device. If the primary function of a device is a non-control function, the device is considered to be a source (or "S").

The equipment section is considered to be part of the facility description. It contains information that is necessary for applicability determinations, such as fuel types, contents or sizes of tanks, etc. This information is part of the factual basis of the permit.

Each of the permitted sources has previously been issued a permit to operate pursuant to the requirements of BAAQMD Regulation 2, Permits. These permits are issued in accordance with state law and the District's regulations. The capacities in the permitted sources table are the

maximum allowable capacities for each source, pursuant to Standard Condition I.J and Regulation 2-1-403.

Following are explanations of the differences in the equipment list between the time that the facility originally applied for a Title V permit and the permit proposal date:

**Devices Permitted Since the Current Title V permit was renewed:**

S-46	Sand Storage Bunker
S-47	Storage Piles
S-50	Slurry Mix Stations
S-51	Specialty Finishing Paint Dip Tanks
S-52	No-Bake Molding System

**Devices with Changed Permit Status:**

In the Title V permit renewed on April 13, 2012, the Schedule of Compliance identified actions that AB&I was required to complete to correct deficiencies in not obtaining permits for loss of exemption sources and alterations that they completed at their facility. AB&I has completed and complied with the schedule of compliance. The following are the result:

**1. Compliance with BAAQMD Regulation 2-1-424: Loss of Exemption or Exclusion and SIP Regulation 2-1-424: Loss of Exemption (S-7, S-8, S-9, S-10, S-46, S-47)**

S-7 through S-10 Automatic Pouring Furnaces were previously exempt, however, a current exemption from permit requirements could not be found. S-7 through S-10 were permitted as part of Application No. 24310.

Sources S-46, S-47, and S-50 were previously not included in the District's records as either exempt or permitted sources, even though they existed with sources S-7 through S-10 and S-14 to produce iron products. These sources were all built in 1975. This was likely a mistake in determining what was a source by both AB&I and the District since AB&I has been inspected by the District many times since the District came into existence. The District permitted S-46, S-47, and S-50 as existing sources (not new or modified) and as part of Application No. 24310.

S-14 was previously exempt, however further review of the emissions from this source showed they were greater than 5 TPY and needed to be permitted. S-14 was permitted as part of Application No. 24310.

**2. Compliance with BAAQMD Regulation 2-1-301: Authority to Construct and 2-1-302 Permit to Operate (Specialty Finishing Paint Dip Tank)**

S-51 (Specialty Finishing Paint Dip Tanks) was reviewed as a new source and permitted as part of Application No. 24453.

**3. Compliance with BAAQMD Regulation 2-1-301: Authority to Construct (alterations to S-2, and S-3)**

**4. Compliance with BAAQMD Regulation 2-1-301: Authority to Construct and 40 CFR Part 52.21 (alteration of S-1)**

The alteration of S-1, S-2, and S-3 was evaluated as part of Application No. 24453. The District determined that the alterations did not result in the modification of the sources. Throughput limits were added to S-1 to document the pre-alteration throughput of the source. Limiting S-1 limits the

rest of the sources at the facility. In addition, the molding sources were added as significant sources to their exempt source list in the Title V permit.

### **Corrections to Devices Shown in Application**

A-35 was added to the abatement source list. It was inadvertently excluded from the prior Title V abatement listing even though it was included in the renewal of the Title V permit.

#### Changes to permit:

#### **Table IIA - The following permitted sources were added to the source listing:**

S-46	Sand Storage Bunker
S-47	Storage Piles
S-50	Slurry Mix Stations
S-51	Specialty Finishing Paint Dip Tanks
S-52	No-Bake Molding System

#### **Table IIB – The following abatement devices were added to the abatement device listing:**

A-35	Fiber Bed Mist Collector
A-36	Mist Eliminator

### III. Generally Applicable Requirements

This section of the permit lists requirements that generally apply to all sources at a facility including insignificant sources and portable equipment that may not require a District permit. If a generally applicable requirement applies specifically to a source that is permitted or significant, the standard will also appear in Section IV and the monitoring for that requirement will also appear in Section IV of the permit. Parts of this section apply to all facilities (e.g., particulate, architectural coating, odorous substance, and sandblasting standards). In addition, standards that apply to insignificant or unpermitted sources at a facility (e.g., refrigeration units that use more than 50 pounds of an ozone-depleting compound) are placed in this section.

Unpermitted sources are exempt from normal District permits pursuant to an exemption in BAAQMD Regulation 2, Rule 1. They may, however, be specifically described in a Title V permit if they are considered “significant sources” as defined in BAAQMD Rule 2-6-239.

#### Changes to permit:

Table III has been updated by adding the following rules and standards to conform to current practice:

- SIP Regulation 5, Open Burning

The dates of adoption or approval of the rules and their “federal enforceability” status in Table III have been updated.

### IV. Source-Specific Applicable Requirements

This section of the permit lists the applicable requirements that apply to permitted or significant sources. These applicable requirements are contained in tables that pertain to one or more sources that have the same requirements. The order of the requirements is:

- District Rules
- SIP Rules (if any) are listed following the corresponding District rules. SIP rules are District rules that have been approved by EPA for inclusion in the California State Implementation Plan. SIP rules are “federally enforceable” and a “Y” (yes) indication will appear in the “Federally Enforceable” column. If the SIP rule is the current District rule, separate citation of the SIP rule is not necessary and the “Federally Enforceable” column will have a “Y” for “yes”. If the SIP rule is not the current District rule, the SIP rule or the necessary portion of the SIP rule is cited separately after the District rule. The SIP portion will be federally

enforceable; the non-SIP version will not be federally enforceable, unless EPA has approved it through another program.

- Other District requirements, such as the Manual of Procedures, as appropriate.
- Federal requirements (other than SIP provisions)
- BAAQMD permit conditions. The text of BAAQMD permit conditions is found in Section VI of the permit.
- Federal permit conditions. The text of Federal permit conditions, if any, is found in Section VI of the permit.

Section IV of the permit contains citations to all of the applicable requirements and the monitoring requirements for these applicable requirements. The text of the requirements is found in the regulations, which are readily available on the District or EPA websites, or in the permit conditions, which are found in Section VI of the permit.

The District has reviewed all monitoring and has determined the existing monitoring is adequate with the following exceptions.

The tables below contain only the limits for which there is no monitoring in the applicable requirements. The District has examined the monitoring for other limits and has added monitoring requirements for sources with inadequate monitoring. The District has determined that the remainder of the sources have monitoring that is adequate to provide a reasonable assurance of compliance. Calculations for potential to emit will be provided in the discussion when no monitoring is proposed due to the size of a source.

Monitoring decisions are typically the result of a balancing of several different factors including: 1) the likelihood of a violation given the characteristics of normal operation, 2) degree of variability in the operation and in the control device, if there is one, 3) the potential severity of impact of an undetected violation, 4) the technical feasibility and probative value of indicator monitoring, 5) the economic feasibility of indicator monitoring, and 6) whether there is some other factor, such as a different regulatory restriction applicable to the same operation, that also provides some assurance of compliance with the limit in question.

These factors are the same as those historically applied by the District in developing monitoring for applicable requirements. It follows that, although Title V calls for a re-examination of all monitoring, there is a presumption that these factors have been appropriately balanced and incorporated in the District's prior rule development and/or permit issuance. It is possible that, where a rule or permit requirement has historically had no monitoring associated with it, no monitoring may still be appropriate in the Title V permit if, for instance, there is little likelihood of a violation. Compliance behavior and associated costs of compliance are determined in part by the frequency and nature of associated monitoring requirements. As a result, the District will generally revise the nature or frequency of monitoring requirements only when it can support a conclusion that existing monitoring is inadequate.

#### Complex Applicability Determinations

The facility is subject to the NESHAP for Iron and Steel Foundries (40 CFR 63 Subpart EEEEE). Continuous Assurance Monitoring (CAM) facility wide recordkeeping requirements were added at the 2012 renewal of their Title V permit (as Permit Condition #25039) and reference in the individual source tables of Section IV.

#### Changes to permit:

Table IV-Facility is added to Section IV of this proposed revision to further document their facility monitoring requirements.



The applicable standards and monitoring requirements were added for new sources: S-51 Specialty Finishing Paint Dip Tanks and S-52 No Bake Molding System as Tables IV-L and IV-M, respectively. S-51 is subject to the NESHAPs for the Coating of Miscellaneous Metal Parts and Products (40 CFR 63 Subpart M). It complies with the NESHAP for using a coating with a VOC and HAP content which is less than the requirement. The facility is required to monitor this standard by recordkeeping requirements stipulated in the NESHAP and by Regulation 8-19.

Table IV-A for S-1 was amended by addition of the grandfathered throughput limits imposed (as Parts 5 and 6 of Condition # 9351) as a result of Application No. 24453. Recordkeeping requirements of Condition # 9351 for S-1 were amended to include recordkeeping to monitor these new limits.

Table IV-I was amended by addition of the addition of A-36 requirements as a result of Application No. 24156.

The District has reviewed all monitoring and has determined the existing monitoring is adequate with the following exceptions.

The tables below contain only the limits for which there is no monitoring or inadequate monitoring in the applicable requirements. The District has examined the monitoring for other limits and has determined that monitoring is adequate to provide a reasonable assurance of compliance. Calculations for potential to emit will be provided in the discussion when no monitoring is proposed due to the size of a source.

Monitoring decisions are typically the result of a balancing of several different factors including: 1) the likelihood of a violation given the characteristics of normal operation, 2) degree of variability in the operation and in the control device, if there is one, 3) the potential severity of impact of an undetected violation, 4) the technical feasibility and probative value of indicator monitoring, 5) the economic feasibility of indicator monitoring, and 6) whether there is some other factor, such as a different regulatory restriction applicable to the same operation, that also provides some assurance of compliance with the limit in question.

These factors are the same as those historically applied by the District in developing monitoring for applicable requirements. It follows that, although Title V calls for a re-examination of all monitoring, there is a presumption that these factors have been appropriately balanced and incorporated in the District's prior rule development and/or permit issuance. It is possible that, where a rule or permit requirement has historically had no monitoring associated with it, no monitoring may still be appropriate in the Title V permit if, for instance, there is little likelihood of a violation. Compliance behavior and associated costs of compliance are determined in part by the frequency and nature of associated monitoring requirements. As a result, the District will generally revise the nature or frequency of monitoring requirements only when it can support a conclusion that existing monitoring is inadequate.

PM Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S-46 Sand Storage Bunker S-47 Storage Pies S-50 Slurry Mix Stations	BAAQMD Regulation 6-1-301	Ringelmann 1.0	N
	BAAQMD Regulation 6-1-311	4.10P <sup>0.67</sup> lb/hr, where P is process weight, ton/hr	N
	SIP 6-1-301	Ringelmann 1.0	N
	SIP 6-1-311	4.10P <sup>0.67</sup> lb/hr, where P is process weight, ton/hr	N

**PM Discussion:**

S-46 Sand Storage Bunker

Drop Operations

The loading and unloading emissions Equation 1 of AP-42, Chapter 13.2.4, Aggregate Handling and Storage Piles is used to estimate emissions of the drop operations into the Sand Storage Bunker. The 2012-2013 actual throughput of waste sand, water treatment sludge, and virgin sand are: 1,200 TPY, 200 TPY, and 1,500 TPY, respectively. Hence, total throughput is 2,900 TPY.

$$E = k(0.0032)[U/5]^{1.3}/[M/2]^{1.4}$$

Where, E = PM10 emission factor (lb/ton)  
 k = particle size multiplier for 10 microns = 0.35  
 U = mean wind speed (mph) = 8.3  
 M = material moisture content (%) = 0.25%

$$E = 0.35(0.0032)[8.3/5]^{1.3}/[0.25/2]^{1.4}$$

$$E = 0.04 \text{ lb/ton}$$

$$\text{PM}_{10} = 2,900 \text{ TPY}(0.04 \text{ lb/ton})(4 \text{ transfer points}) = 461 \text{ lbs/yr} = 0.231 \text{ TPY}$$

Wind Erosion

The wind erosion factor of 3.5 lb/acre/day TSP is taken from the 4<sup>th</sup> Edition of AP-42, Section 8.19, Table 8.19.1-1(for storage piles at crushing and grinding plant).

The Sand Storage Bunker is approximately 4,700 square feet or 0.11 acre, per AB&I.

Per the 4<sup>th</sup> Edition of AP-42, Section 8.19, PM10 emissions are 50% of the TSP emission factor for wind erosion, the following PM10 emissions are estimated for wind erosion:

$$\text{PM10} = 0.11 \text{ acre}(3.5 \text{ lb/acre/day})(365 \text{ day/yr}) (50\%) = 70 \text{ lb/yr} = 0.035 \text{ TPY}$$

#### Haul Roads

The waste sand, waste sludge, and virgin sand are brought in and taken away by truck. A front end loader moves it to and from the storage site. The trucks are assumed to weigh 15 tons unloaded and 40 tons loaded. The front loaders are assumed to weigh 12.5 tons unloaded. The bucket in the front loader has a capacity of 1.75 cubic yards. According to AB&I, the density of the waste and virgin sand loaded is assumed the same and approximately 1.42 ton per cubic yard. The waste sludge is assumed similar to mud and approximately 1.22 tons per cubic yard. Therefore, the maximum front loader weight is assumed to be 15.0 tons. The total throughput of materials moved is 2,900 TPY. Hence, the amount of front loader trips is estimated to be 1,360:

$$\# \text{ of Trips} = 2,900 \text{ ton/yr} / (1.22 \text{ ton/yd}^3)(1.75 \text{ yd}^3/\text{trip}) = 1,358.3 \text{ (round up to 1,360)}$$

The average truck round trip is estimated to be 980 feet or 0.2 miles. The average front loader trip is estimated to be 560 feet or 0.1 miles. About 232 trucks will call at the facility to deliver materials to and from the source per year.

Emissions from haul roads are estimated using Equation 1 of AP-42 Chapter 13.2.1.3:

$$E = k(sL)^{0.91}(W)^{1.02}$$

Where, E = particulate emission factor (lb/VMT)  
k = particle size multiplier for 10 microns = 0.0022  
sL = road surface silt loading factor for low averaging daily traffic = 0.6  
W = average weight (tons) of the vehicles traveling the road = 27.5 for trucks,  
14.55 for front loaders

$$E = 0.0022(0.6)^{0.91}(27.5)^{1.02} = 0.041 \text{ lb/VMT for truck}$$
$$E = 0.0022(0.6)^{0.91}(14.55)^{1.02} = 0.021 \text{ lb/VMT for front loader}$$

$$\text{VMT} = 0.2 \text{ miles}(232 \text{ trucks/yr}) = 46 \text{ VMT/yr for trucks}$$
$$\text{VMT} = 0.1 \text{ miles}(2)(1360 \text{ trips}) = 272 \text{ VMT/yr for front loaders}$$

$$\text{PM10} = 0.041 \text{ lb/VMT}(46 \text{ VMT/yr}) + 0.021 \text{ lb/VMT}(272 \text{ VMT/yr}) = 7.6 \text{ lb/yr} = 0.004 \text{ TPY}$$

The total PM10 emissions from transfers, wind erosions, and haul roads at S-46 is 0.27 TPY:

$$\text{PM10} = 0.231 + 0.035 + 0.004 = 0.27 \text{ TPY}$$

Because the estimated PM10 emissions is relatively small, it is expected to meet Regulation 6-1 requirements with no additional monitoring required.

### S-47 Storage Piles, 13000 Cubic Feet

#### Drop Operations

The loading and unloading emissions Equation 1 of AP-42, Chapter 13.2.4, Aggregate Handling and Storage Piles is used to estimate emissions of the drop operations into the Storage Piles. The actual throughput of coke, limestone, and slag are: 13,540 TPY, 17,200 TPY, and 7,320 TPY, respectively.

$$E = k(0.0032)[U/5]^{1.3}/[M/2]^{1.4}$$

Where, E = PM10 emission factor (lb/ton)  
k = particle size multiplier for 10 microns = 0.35  
U = mean wind speed (m/s) = 8.3  
M = material moisture content (%) = 0.25% for coke and slag, 0.20 for limestone,

$$E = 0.35(0.0032)[8.3/5]^{1.3}/[0.25/2]^{1.4}$$

$$E = 0.04 \text{ lb/ton for coke and slag}$$

$$E = 0.35(0.0032)[8.3/5]^{1.3}/[0.2/2]^{1.4}$$

$$E = 0.05 \text{ lb/ton for limestone}$$

$$\begin{aligned} \text{PM}_{10} &= (13,540 + 17,200 \text{ TPY})(0.04 \text{ lb/ton})(2 \text{ transfer points}) + \\ &7,320 \text{ TPY}(0.05 \text{ lb/ton})(2 \text{ transfer points}) = 3,191 \text{ lbs/yr} \\ &= 1.6 \text{ TPY} \end{aligned}$$

#### Wind Erosion

The wind erosion factor of 3.5 lb/acre/day is taken from the wind erosion emission factor for storage piles at crushing and grinding plants in the 4<sup>th</sup> Edition of AP-42, Section 8.19, Table 8.19.1-1.

The Storage Piles is approximately 18,375 square feet or 0.42 acre, per AB&I.

Per the 4<sup>th</sup> Edition of AP-42, Section 8.19, the PM10 emissions are 50% of the TSP emission factor for wind erosion, the following PM10 emissions are estimated for wind erosion:

$$\text{PM}_{10} = 0.42 \text{ acre}(3.5 \text{ lb/acre/day})(365 \text{ day/yr}) (50\%) = 268 \text{ lb/yr} = 0.134 \text{ TPY}$$

#### Haul Roads

Limestone is hauled by truck to the facility. Coke is delivered by rail (separate railcar emissions are calculated on the following page). A front-end loader moves these materials to the storage piles. The slag is produced on site and is loaded onto trucks for disposal. The limestone and slag trucks are assumed to weigh 15 tons unloaded and 40 tons loaded. The front loaders are assumed to weigh 12.5 tons unloaded. The bucket in the front loader has a capacity of 1.75 cubic yards. According to AB&I, the density of the coke, limestone, and slag are estimated to be 1.28 tons per cubic yard, 2.09 tons/cubic yard, and 2.32 tons per cubic yard, respectively. Therefore, the maximum front loader weight is assumed to be 16.56 tons.

The average truck round trip is estimated to be 980 feet or 0.2 miles. The average front loader trip is estimated to be 560 feet or 0.1 miles. About 295 limestone trucks and 690 slag trucks will call at the facility to deliver materials to and from the source per year.

The amount of front loader trips is estimated to be 12,550:

$$\begin{aligned} \# \text{ of Trips} &= 13,540 \text{ ton/yr} / (1.28 \text{ ton/yd}^3)(1.75 \text{ yd}^3/\text{trip}) + \\ & 17,200 \text{ tons/yr} / (2.09 \text{ ton/yd}^3)(1.75 \text{ yd}^3/\text{trip}) + \\ & 7,320 \text{ tons/yr} / (2.32 \text{ tons/yd}^3)(1.75 \text{ yd}^3/\text{trip}) = 12,548 \text{ (round up to} \\ & 12,550) \end{aligned}$$

Emissions from haul roads are estimated using Equation 1 of AP-42 Chapter 13.2.1.3:

$$E = k(sL)^{0.91}(W)^{1.02}$$

Where, E = particulate emission factor (lb/VMT)  
k = particle size multiplier for 10 microns = 0.0022  
sL = road surface silt loading factor for low averaging daily traffic = 0.6  
W = average weight (tons) of the vehicles traveling the road = 27.5 for trucks,  
14.55 for front

loaders

$$\begin{aligned} E &= 0.0022(0.6)^{0.91}(27.5)^{1.02} = 0.041 \text{ lb/VMT for truck} \\ E &= 0.0022(0.6)^{0.91}(14.55)^{1.02} = 0.021 \text{ lb/VMT for front loader} \end{aligned}$$

$$\text{VMT} = 0.2 \text{ miles}(295 + 690 \text{ trucks/yr}) = 197 \text{ VMT/yr for trucks}$$

$$\text{VMT} = 0.1 \text{ miles}(12,550 \text{ trips}) = 1255 \text{ VMT/yr for front loaders}$$

$$\text{PM}_{10} = 0.041 \text{ lb/VMT}(197 \text{ VMT/yr}) + 0.021 \text{ lb/VMT}(1255 \text{ VMT/yr}) = 34 \text{ lb/yr} = 0.017 \text{ TPY}$$

Railcar Emissions (for the delivery of coke)

Material throughput: 13,540 TPY

Weight of Material per railcar: 100 tons

Railcar Tare Weight: 40 tons

Distance traveled within BAAQMD – 100 rail miles

KTM – thousand ton-miles

KGTM – thousand gross ton-miles

Total Railcar per year = (13,540 TPY)/100 tons = 140 rail car per year (rounded up)

Laden = (40 tons/railcar) + (100 tons material/railcar) = 140 tons

Annual Unladen miles = [(40 ton/railcar)(140 railcar/year)(100 miles)]/1000 = 560 KTM

Annual Laden miles = [(140 tons/railcar)(140 railcar/year)(100 miles)]/1000 = 1960 KTM

Total annual KTM = (560 KTM) + (1920 KTM) = 2480 KTM

District approved railroad system factors used in Permit Condition # 7216, USS POSCO

Union Pacific (laden & unladen) = 1.02 gallon/KGTM  
(1.02 gal/KGTM)(2480 KTM/yr) = 2530 gallons/yr = 2.5 Kgallons/yr

Pollutant	Emission Factor, lbs/Kgallons (1)	Annual Emissions lbs/year	TPY
PM10	13.22	33	0.02
NOx	379.96	950	0.47
SOx	14.37	36	0.02
CO	60.35	151	0.08
POC	21.15	53	0.03

(1) emission factors from Permit condition # 7216 – USS Posco for Line haul engines  
The total PM10 emissions from transfers, wind erosions, haul roads, and railcars at S-46 is 0.26 TPY:

$$PM10 = 1.6 + 0.134 + 0.017 + 0.02 = 1.8 \text{ TPY}$$

Because the estimated PM10 emissions is relatively small, it is expected to meet Regulation 6-1 requirements with no additional monitoring required.

#### S-50 Slurry Mix Stations

AP-42 Chapter 13.2.4, Aggregate Handling and Storage Piles, was used to estimate emissions from this source because bags of minex, bootblack, and bentonite are cut and dropped into mixing vessels to make a slurry from the materials with soap and water. Bentonite is clay. Minex is a nepheline syenite. Bootblack is a core and mold coating containing graphite and kolin, montmorillonite, steatite, clay, carbon and silica.

The equation is:

$$E = k(0.0032)[((U/5)^{1.3})/((M/2)^{1.4})]$$

Where, E = emission factor (lb/ton)  
k = particle size multiplier for 10 microns = 0.35  
U = mean wind speed (mph) = 8.3  
M = moisture content (%) = 0.25%

$$E = (0.35)(0.0032)[((8.3/5)^{1.3})/((0.25/2)^{1.4})]$$

$$E = 0.04 \text{ lb/ton}$$

Approximately 3210 TPY of materials is mixed through the source. Hence, the estimated PM10 emissions from S-50 are:

$$PM10 = 3210 \text{ TPY}(0.04 \text{ lb/ton}) = 128 \text{ lb/ton} = 0.06 \text{ TPY}$$

Because the estimated PM10 emissions is relatively small, it is expected to meet Regulation 6-1 requirements with no additional monitoring required.

## V. Schedule of Compliance

A schedule of compliance is required in all Title V permits pursuant to BAAQMD Regulation 2-6-409.10 which provides that a major facility review permit shall contain the following information and provisions:

“409.10 A schedule of compliance containing the following elements:

- 10.1 A statement that the facility shall continue to comply with all applicable requirements with which it is currently in compliance;
- 10.2 A statement that the facility shall meet all applicable requirements on a timely basis as requirements become effective during the permit term; and
- 10.3 If the facility is out of compliance with an applicable requirement at the time of issuance, revision, or reopening, the schedule of compliance shall contain a plan by which the facility will achieve compliance. The plan shall contain deadlines for each item in the plan. The schedule of compliance shall also contain a requirement for submission of progress reports by the facility at least every six months. The progress reports shall contain the dates by which each item in the plan was achieved and an explanation of why any dates in the schedule of compliance were not or will not be met, and any preventive or corrective measures adopted.”

A schedule of compliance was added at the renewal on April 13, 2012. At that time, the District had determined that the facility is out of compliance with pre-construction permit application requirements. As a result, a schedule of compliance was added to require the facility to apply for permits.

This Title V amendment includes the permit applications that the facility was required to submit. The District has determined that the facility (AB&I) has met the deadlines and requirements of the schedule of compliance and obsolete sections have been deleted from this section.

The responsible official for AB&I has submitted a signed Certification Statement form dated March 18, 2014. On this form, the responsible official certified that the following statements are true:

- Based on information and belief formed after reasonable inquiry, the source(s) identified in the Applicable Requirements and Compliance Summary form that is(are) in compliance will continue to comply with the applicable requirement(s);
- Based on information and belief formed after reasonable inquiry, the source(s) identified in the Applicable Requirements and Compliance Summary form will comply with future-effective applicable requirement(s), on a timely basis;
- Based on information and belief formed after reasonable inquiry, information on application forms, all accompanying reports, and other required certifications is true, accurate, and complete; and
- All fees required by Regulation 3, including Schedule P have been paid.

### Changes to permit:

Deleted prior Schedule of Compliance.

## VI. Permit Conditions

During the Title V permit development, the District has reviewed the existing permit conditions, deleted the obsolete conditions, and, as appropriate, revised the conditions for clarity and

enforceability. Each permit condition is identified with a unique numerical identifier, up to five digits.

When necessary to meet Title V requirements, additional monitoring, recordkeeping, or reporting requirements have been added to the permit.

All changes to existing permit conditions are clearly shown in “strike-out/underline” format in the proposed permit. When the permit is issued, all “strike-out” language will be deleted and all “underline” language will be retained, subject to consideration of comments received.

The existing permit conditions are derived from previously issued District Authorities to Construct (A/C) or Permits to Operate (P/O). Permit conditions may also be imposed or revised as part of the annual review of the facility by the District pursuant to California Health and Safety Code (H&SC) § 42301(e), through a variance pursuant to H&SC § 42350 et seq., an order of abatement pursuant to H&SC § 42450 et seq., or as an administrative revision initiated by District staff. After issuance of the Title V permit, permit conditions will be revised using the procedures in Regulation 2, Rule 6, Major Facility Review.

Conditions that are obsolete or that have no regulatory basis have been deleted from the permit.

Conditions have also been deleted due to the following:

- Redundancy in recordkeeping requirements.
- Redundancy in other conditions, regulations and rules.
- The condition has been superseded by other regulations and rules.
- The equipment has been taken out of service or is exempt.
- The event has already occurred (i.e. initial or start-up source tests).

The regulatory basis is listed following each condition. The regulatory basis may be a rule or regulation. The District is also using the following terms for regulatory basis:

- BACT: This term is used for a condition imposed by the Air Pollution Control Officer (APCO) to ensure compliance with the Best Available Control Technology in Regulation 2-2-301.
- Cumulative Increase: This term is used for a condition imposed by the APCO that limits a source’s operation to the operation described in the permit application pursuant to BAAQMD Regulation 2-1-403.
- Offsets: This term is used for a condition imposed by the APCO to ensure compliance with the use of offsets for the permitting of a source or with the banking of emissions from a source pursuant to Regulation 2, Rules 2 and 4.
- PSD: This term is used for a condition imposed by the APCO to ensure compliance with a Prevention of Significant Deterioration permit issued pursuant to Regulation 2, Rule 2.

Changes to permit:

- Condition # 24639 – By the addition of A-36 Mist Eliminator as an abatement device for S-34 through S-36 (Pipe Finishing Dip Tanks) to control odors, the condition was amended to reflect the addition of A-36 as an abatement device in Application No. 24156.
- Condition # 25437 – These new permit conditions for S-52 No Bake Molding System, permitted in Application No. 24761, were added.
- Condition # 25748 - These new permit conditions for S-51 Specialty Finishing Paint Dip Tanks, permitted in Application No. 24453, were added.



- Condition # 9351 – This condition was amended by the addition of grandfathered daily throughput limits for S-1 and the coke ratio to ensure that S-1 is not a modified source as a result of the alterations performed on it by the facility. The details of the alteration and reasoning are discussed in Application No. 24453.
- Condition # 23650 – This condition was amended to correct a typo and to include reference to exempt sources cited in Part 8.

#### VIII. Test Methods

This section of the permit lists test methods that are associated with standards in District or other rules. It is included only for reference. In most cases, the test methods in the rules are source test methods that can be used to determine compliance but are not required on an ongoing basis. They are not “applicable requirements” as defined by Regulation 2-6-202.

If a rule or permit condition requires ongoing testing, the requirement will also appear in Section IV of the permit.

#### Changes to permit:

None.

#### IX. Permit Shield

The District rules allow two types of permit shields. The permit shield types are defined as follows: (1) A provision in a major facility review permit explaining that specific federally enforceable regulations and standards do not apply to a source or group of sources, or (2) A provision in a major facility review permit explaining that specific federally enforceable applicable requirements for monitoring, recordkeeping and/or reporting are subsumed because other applicable requirements for monitoring, recordkeeping, and reporting in the permit will assure compliance with all emission limits.

The second type of permit shield is allowed by EPA’s “White Paper 2 for Improved Implementation of the Part 70 Operating Permits Program.” The District uses the second type of permit shield for all streamlining of monitoring, recordkeeping, and reporting requirements in Title V permits. The District’s program does not allow other types of streamlining in Title V permits.

This facility has no permit shields.

This permit has no streamlining.

#### X. Glossary

#### Changes to permit:

- None.

#### XI. Revision History

The Title V permit was renewed on April 13, 2012.

### **D. Alternate Operating Scenarios**

No alternate operating scenario has been requested for this facility.

**E. Compliance Status**

The responsible official for AB&I submitted a signed Certification Statement form dated March 18, 2014. On this form, the responsible official certified that the following four statements are true:

- Based on information and belief formed after reasonable inquiry, the source(s) identified in the Applicable Requirements and Compliance Summary form that is(are) in compliance will continue to comply with the applicable requirement(s);
- Based on information and belief formed after reasonable inquiry, the source(s) identified in the Applicable Requirements and Compliance Summary form will comply with future-effective applicable requirement(s), on a timely basis;
- Based on information and belief formed after reasonable inquiry, information on application forms, all accompanying reports, and other required certifications is true, accurate, and complete; and
- All fees required by Regulation 3, including Schedule P have been paid.

**F. Differences between the Application and the Proposed Permit**

The changes are explained in each section above as well as in the attached Engineering Evaluations in Appendix B of this Statement of Basis.

**APPENDIX A: GLOSSARY**

**ACT**

Federal Clean Air Act

**APCO**

Air Pollution Control Officer

**ARB**

Air Resources Board

**BAAQMD**

Bay Area Air Quality Management District

**BACT**

Best Available Control Technology

**Basis**

The underlying authority which allows the District to impose requirements.

**CAA**

The federal Clean Air Act

**CAAQS**

California Ambient Air Quality Standards

**CAM**

Compliance Assurance Monitoring per 40 CFR Part 64

**CAPCOA**

California Air Pollution Control Officers Association

**CEM**

Continuous Emission Monitor

**CEQA**

California Environmental Quality Act

**CFR**

The Code of Federal Regulations. 40 CFR contains the implementing regulations for federal environmental statutes such as the Clean Air Act. Parts 50-99 of 40 CFR contain the requirements for air pollution programs.

**CO**

Carbon Monoxide

**Cumulative Increase**

The sum of permitted emissions from each new or modified source since a specified date pursuant to BAAQMD Rule 2-1-403, Permit Conditions (as amended by the District Board on 7/17/91) and SIP Rule 2-1-403, Permit Conditions (as approved by EPA on 6/23/95). Cumulative increase is used to determine whether threshold-based requirements are triggered.

**District**

The Bay Area Air Quality Management District

**EPA**

The federal Environmental Protection Agency.

**Excluded**

Not subject to any District regulations.

**Federally Enforceable, FE**

All limitations and conditions which are enforceable by the Administrator of the EPA including those requirements developed pursuant to 40 CFR Part 51, subpart I (NSR), Part 52.21 (PSD), Part 60 (NSPS), Part 61 (NESHAPs), Part 63 (MACT), and Part 72 (Permits Regulation, Acid Rain), including limitations and conditions contained in operating permits issued under an EPA-approved program that has been incorporated into the SIP.

**FP**

Filterable Particulate as measured by BAAQMD Method ST-15, Particulate.

**HAP**

Hazardous Air Pollutant. Any pollutant listed pursuant to Section 112(b) of the Act. Also refers to the program mandated by Title I, Section 112, of the Act and implemented by 40 CFR Part 63.

**Major Facility**

A facility with potential emissions of: (1) at least 100 tons per year of regulated air pollutants, (2) at least 10 tons per year of any single hazardous air pollutant, and/or (3) at least 25 tons per year of any combination of hazardous air pollutants, or such lesser quantity of hazardous air pollutants as determined by the EPA administrator.

**MFR**

Major Facility Review. The District's term for the federal operating permit program mandated by Title V of the Federal Clean Air Act and implemented by District Regulation 2, Rule 6.

**MOP**

The District's Manual of Procedures.

**NAAQS**

National Ambient Air Quality Standards

**NESHAPS**

National Emission Standards for Hazardous Air Pollutants. See in 40 CFR Parts 61 and 63.

**NMHC**

Non-methane Hydrocarbons (Same as NMOC)

**NMOC**

Non-methane Organic Compounds (Same as NMHC)

**NO<sub>x</sub>**

Oxides of nitrogen.

**NSPS**

Standards of Performance for New Stationary Sources. Federal standards for emissions from new stationary sources. Mandated by Title I, Section 111 of the Federal Clean Air Act, and implemented by 40 CFR Part 60 and District Regulation 10.

**NSR**

New Source Review. A federal program for pre-construction review and permitting of new and modified sources of pollutants for which criteria have been established in accordance with Section 108 of the Federal Clean Air Act. Mandated by Title I of the Federal Clean Air Act and implemented by 40 CFR Parts 51 and 52 and District Regulation 2, Rule 2. (Note: There are additional NSR requirements mandated by the California Clean Air Act.)

**Offset Requirement**

A New Source Review requirement to provide federally enforceable emission offsets for the emissions from a new or modified source. Applies to emissions of POC, NO<sub>x</sub>, PM<sub>10</sub>, and SO<sub>2</sub>.

**Phase II Acid Rain Facility**

A facility that generates electricity for sale through fossil-fuel combustion and is not exempted by 40 CFR 72 from Titles IV and V of the Clean Air Act.

**POC**

Precursor Organic Compounds

**PM**

Particulate Matter

**PM<sub>10</sub>**

Particulate matter with aerodynamic equivalent diameter of less than or equal to 10 microns

**PSD**

Prevention of Significant Deterioration. A federal program for permitting new and modified sources of those air pollutants for which the District is classified "attainment" of the National Air Ambient Quality Standards. Mandated by Title I of the Act and implemented by both 40 CFR Part 52 and District Regulation 2, Rule 2.

**PTE**

Potential to Emit as defined by BAAQMD Regulation 2-6-218

**SIP**

State Implementation Plan. State and District programs and regulations approved by EPA and developed in order to attain the National Air Ambient Quality Standards. Mandated by Title I of the Act.

**SO<sub>2</sub>**

Sulfur dioxide

**THC**

Total Hydrocarbons (NMHC + Methane)

**Title V**

Title V of the federal Clean Air Act. Requires a federally enforceable operating permit program for major and certain other facilities.

**TOC**

Total Organic Compounds (NMOC + Methane, Same as THC)

**TPH**

Total Petroleum Hydrocarbons

**TRMP**

Toxic Risk Management Plan

**TSP**

Total Suspended Particulate

**VOC**

Volatile Organic Compounds

**Units of Measure:**

bhp	=	brake-horsepower
btu	=	British Thermal Unit
cu. ft.	=	cubic foot
cfm	=	cubic feet per minute
dscf	=	dry standard cubic foot
dscfm	=	dry standard cubic foot per minute
g	=	gram
gal	=	gallon
gpm	=	gallons per minute
gr	=	grain
hp	=	horsepower
hr	=	hour
lb	=	pound
in	=	inch
max	=	maximum
m <sup>2</sup>	=	square meter
min	=	minute
mm	=	million
MMbtu	=	million btu
MMcf	=	million cubic feet
ppmv	=	parts per million, by volume
ppmw	=	parts per million, by weight
psia	=	pounds per square inch, absolute
psig	=	pounds per square inch, gauge
scfm	=	standard cubic feet per minute
tpy	=	tons per year
yr	=	year

**APPENDIX B: ENGINEERING EVALUATIONS**



**ENGINEERING EVALUATION**  
**AB&I Foundry, Plant: 62**  
**7825 San Leandro Street, Oakland, CA 94621**  
**Application: 24156**

## **Background**

AB&I Foundry is applying for an Authority to Construct/Permit to Operate for the following proposed mist collector:

- A-36 Mist Eliminator, Blue Smoke Control, Model 6S12C, 21931 dscfm max, to abate:**
- S-34 P5-P6 Pipe Finishing Dip Tank, 114 Gallon Capacity**
- S-35 P4 Pipe Finishing Dip Tank, 454 Gallon Capacity**
- S-36 P2-P3 Pipe Finishing Dip Tank, 333 Gallon Capacity**

S-34, S-35, and S-36 are currently abated by A-35 Fiber Bed Mist Collector (15000 cfm). The proposed A-36 will be operated in parallel with A-35.

The facility voluntarily installed existing A-35 to collect fumes generated from the heated asphalt in S-34, S-35, and S-36. The proposed A-36 was deemed necessary by the facility because A-35 has not sufficiently minimized odors. A-36 features a greater rated airflow capacity than A-35, which will ensure sufficient odor control.

Since the purpose of A-36 is odor minimization (with minimal emission abatement), no abatement efficiency is assumed for A-36. Similarly, no abatement efficiency had been assumed for existing A-35.

## **Emissions Calculations**

There will be no emissions increase as a result of this application.

## **Statement of Compliance**

### **BACT Review and Determination**

In accordance with Regulation 2, Rule 2, Section 301, BACT is triggered for any new or modified source with the potential to emit 10 pounds or more per highest day of POC, NPOC, NO<sub>x</sub>, CO, SO<sub>2</sub> or PM<sub>10</sub>.

BACT is not required for POC, NPOC, NO<sub>x</sub>, CO, SO<sub>2</sub> or PM<sub>10</sub> because no increase in emissions is expected from this project.

### **Plant Cumulative Increase and Offsets**

Pursuant to Regulations 2-2-302 and 2-2-303, offsets are required for any increase in emissions at a facility that emits over 10 tons per year of POC or NO<sub>x</sub>, or is located at a Major Facility and is over 1.0 ton per year since April 5, 1991 for PM<sub>10</sub> or SO<sub>2</sub>. Because there is no cumulative increase associated with this project, offsets are not required.

**Toxics NSR/TBACT**

A Health Risk Screening Analysis per Regulation 2-5 is not required because there is no increase in toxic emissions from this project.

**District Rules**

S-34, S-35, and S-36 will continue to comply with Regulation 8-19 (Surface Preparation and Coating of Miscellaneous Metal Parts). Per Regulation 8-19-301.2 (Air-Dried Coatings), the VOC limit of the asphalt is below 2.8 lb/gallon.

**Federal Rules**

PSD and NSPS are not triggered for this source.

This facility is subject to 40 CFR 63 Subpart M, NESHAPs for Surface Coating of Miscellaneous Metal Parts. S-34, S-35, and S-36 Pipe Finishing Dip Tanks are subject to the § 63.3890 HAP limit of 1.9 lb organic HAP per gallon of coating solids during each 12-month period. The facility meets the compliant material option in § 63.3891, so the facility is not subject to operating limits (per § 63.3892(a)) or work practice standards (per § 63.3893(a)).

**CEQA**

Because this project is for the installation of abatement equipment, it is not subject to CEQA review by the District per Regulation 2-1-312.2. The District has reviewed the CEQA Appendix H form completed by the applicant, and has confirmed that this project is exempt from CEQA requirements.

**Public Notices**

This facility is not located 1000 feet of the nearest school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

**Recommendation**

Issue an Authority to Construct to AB&I Foundry, for:

- A-36 Mist Eliminator, Blue Smoke Control, Model 6S12C, 21931 dscfm max, abating:**
- S-34 P5-P6 Pipe Finishing Dip Tank, 114 Gallon Capacity**
- S-35 P4 Pipe Finishing Dip Tank, 454 Gallon Capacity**
- S-36 P2-P3 Pipe Finishing Dip Tank, 333 Gallon Capacity**

**Permit Conditions**

COND# 24639 -----

For

- S-34 P5-P6 Pipe Finishing Dip Tank: 114 Gallon Capacity; abated by A-35 Fiber Bed Mist Collector and A-36 Mist Eliminator
- S-35 P4 Pipe Finishing Dip Tank: 454 Gallon

- Capacity; abated by A-35 Fiber Bed Mist Collector and A-36 Mist Eliminator
- S-36 P2-P3 Pipe Finishing Dip Tank: 333 Gallon Capacity; abated by A-35 Fiber Bed Mist Collector and A-36 Mist Eliminator
- S-43 P1 Pipe Finishing Dip Tank: 182 Gallon Capacity

1. The owner/operator shall ensure the annual net coating usage at S-34, 35, S-36 and S-43 Pipe Finishing Dip Tanks does not exceed a combined total throughput of 251,442 gallons (1090 tons) over any consecutive twelve month period. (basis: Cumulative Increase, Offsets, Toxics)
2. The owner/operator shall ensure the annual net coating usage at S-43 P1 Pipe Finishing Dip Tank does not exceed 2,000 gallons over any consecutive twelve month period. (basis: Cumulative Increase)
3. The owner/operator shall use exclusively synthetic asphalt pipe coating (manufactured by Professional Coating Tech., Inc.) at S-34, 35, S-36 and S-43 Pipe Finishing Dip Tanks to ensure the VOC content of the asphalt does not exceed 0.04 lb/gal. (basis: Cumulative Increase)
4. The owner/operator shall ensure S-34, S-35 and S-36 are continuously abated by A-35 Fiber Bed Mist Collector and A-36 Mist Eliminator during all periods of operation. (Basis: Cumulative Increase)
5. The owner/operator shall equip the A-35 Fiber Bed Mist Collector and A-36 Mist Eliminator with a pressure gauge and operate and maintain the abatement device according to manufacturer's instructions. (Basis: Cumulative Increase)
6. The owner/operator shall ensure the operating temperature of each hot dip tank (S-34 or S-35 or S-36 or S-43) does not exceed 500oF. (Basis: Cumulative Increase, Toxics)
7. The owner/operator of S-34, S-35, S-36 and S-43 shall install and operate a temperature measuring and recording device to continually monitor and record

the temperature of the heated asphalt bath at each source. This record shall be kept for a period of at least 5 years from date of entry. (Basis: Toxics, Cumulative Increase, monitoring)

8. The owner/operator shall not use any cleanup solvent at S-34, S-35, S-36 and S-43. (Basis: Cumulative Increase, Toxics)
9. In the event there is one District-confirmed odor complaint, the owner/operator shall submit an abatement plan to the District Engineering Division for S-43. If required, the owner/operator shall install a District-approved abatement device upon approval from the District. (Basis: Regulation 1-301)
10. In the event this operation causes a public nuisance under Regulation 1-301 due to odors, the owner/operator shall submit a comprehensive odor abatement plan to eliminate or sufficiently reduce odors to tolerable levels at the facility to the District's Engineering Division within 30 days of the public nuisance. The owner/operator shall obtain District approval of the odor abatement plan and comply with the District-approved odor abatement plan. The plan shall be modified and re-approved by the District as necessary to keep odors at tolerable levels at the facility. Tolerable odor levels shall be odor levels that do not result in a public nuisance. (Basis: Public Nuisance, Regulation 1-301)
11. The owner/operator of S-34, S-35, S-36 and S-43 shall maintain monthly records, in a District approved log, of the total net usage of asphalt coating (in gallons) used at all of these sources. In addition, the owner/operator shall maintain monthly records, in a District approved log, of the estimated net asphalt coating (in gallons) used at each source. Furthermore, the owner/operator shall maintain monthly records, in a District-approved log, of the following:
  - a) the operating hours of S-34, S-35, S-36, and S-43,
  - b) the operating hours of A-35 Fiber Bed Mist Collector [and A-36 Mist Eliminator](#),
  - and c) the maintenance

records for A-35 Fiber Bed Mist Collector  
[and A-36 Mist Eliminator](#). All records shall  
be retained for a period of at least five  
years from date of entry. This log shall  
be kept on site and made available to the  
District's staff upon request. (Basis:  
Recordkeeping)

12. [Deleted. Cutback asphalt dip tanks shut  
down on 7/21/2010, 12/16/2010, and  
6/30/2011.]

By: (Signed by Jimmy Cheng)

Jimmy Cheng  
Air Quality Engineer

Date: 7/11/12

**Engineering Evaluation  
 AB&I Foundry  
 Application # 24761  
 Plant # 62**

**Background**

AB&I Foundry has applied for an Authority to Construct/Permit to Operate for the following equipment:

**S-52 No-Bake Molding System Utilizing Techniset Binder, abated by S-1 Cupola (as afterburner, which is in turn abated by A-20 & A-22 baghouses) and A-21 & A-25 baghouses.**

**Emissions calculations**

**VOC EMISSIONS:**

- Basis:
- Sand throughput = 16,200 tpy
  - Maximum annual throughput of binder = 43,880 gallons per year
  - Density of binder = 9.23 lb/gal
  - VOC content = 6.96% by weight
  - Abatement efficiency = 99%
  - Operation = 10 hr/day, 4 days/wk, 48 wk/yr

Using mass balance to estimate POC emissions will give the following results:

$$\text{POC} = (43,880 \text{ gal/yr})(9.23 \text{ lb/gal})(0.0696)(1 - 0.99) = 282 \text{ lb/yr} = 1.47 \text{ lb/day} = \mathbf{0.14 \text{ ton/yr}}$$

**Plant Cumulative Emissions**

Pollutant	Current plant emissions (TPY)	Increase in plant emissions associated with this application (TPY)	Cumulative emissions (Current + Increase) (TPY)
POC	5.047	0.140	5.187

**BACT**

This project does not trigger BACT pursuant to Regulation 2-2-301 because POC emissions are less than 10 lb/day.

**Offsets**

The POC increases associated with this project do not trigger offsets.

**Toxics Risk Screening Analysis**

Toxic Emissions are calculated as follows:

TAC	Emission Factor* Lb/ton sand	Emissions (lb/hr)	Acute Trigger (lb/hr)	Emissions (lb/yr)	Chronic Trigger (lb/yr)
Benzene	3.97E-04	3.4E-03	2.9E00	6.4E+00	3.8E+00

\* Emission factor from Avogadro source test on Techniset binder.

Per the attached December 18, 2012 memo from Ted Hull, results from the health risk screening analysis indicate that the maximum cancer risk is 0.01 in a million and for the maximally exposed residential receptor is 0.01 in a million, chronic hazard index for the is 0.000009 and the acute hazard index is 0.001. In accordance with Regulation 2-5, the risk level is acceptable.

**Statement of Compliance**

S-52 No-Bake Molding System is subject to and in compliance with District Regulation 8-4, General Solvent and Surface Coating Operations, Section 302.

- The VOC contents of the Techniset binder is 0.64 lb/gal; less than the maximum of 3.5 lb/gal required in Section 302.3.

A toxics risk screen has determined that the risk level is acceptable.

PSD, NSPS, and NESHAPs do not apply.

The project is over 1000 feet from the nearest school and therefore is not subject to the public notification requirements of Regulation 2-1-412.

**Permit Conditions**

COND# 25437 -----

Conditions for S-52, No-Bake Molding System  
Application 24761, Plant 62

1. The owner/operator of S-52 No-Bake Molding System shall not exceed 43,880 gallons of Techniset binder during any consecutive twelve-month period.  
(Basis: Cumulative Increase)
2. The owner/operator of S-52 No-Bake Molding System shall operate S-52 only while abated by S-1 Cupola (as afterburner), and A-21 and A-25, baghouses.  
(Basis: Cumulative Increase)
3. The owner/operator may use an alternate binder other than the materials specified in Part 1, provided that the owner/operator can demonstrate to the satisfaction of the APCO that all of the following are satisfied:
  - a. Total abated POC emissions from the alternate binder at S-52 No-Bake Molding System do not exceed 282 pounds in any consecutive twelve-month period;
  - b. The use of these materials does not increase toxic emissions above any chronic risk screening trigger level of Table 2-5-1 in Regulation 2-5.(Basis: Cumulative Increase; Toxics)
4. To determine compliance with the above parts, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above parts, including the following information:

- a. Quantities of each type of binder used at this source on a monthly basis.
- b. If a material other than those specified in Part 1 is used, POC and toxic component contents of each material used; and mass emission calculations to demonstrate compliance with Part 2, on a monthly basis;
- c. Monthly usage and/or emission calculations shall be totaled for each consecutive twelve-month period. All records shall be retained on-site for five years, from the date of entry, and made available for inspection by District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable District Regulations.  
(Basis: Cumulative Increase; Toxics)

**RECOMMENDATION**

Issue Authority to Construct to AB&I Foundry for:

**S-52 No-Bake Molding System Utilizing Techniset Binder, abated by S-1 Cupola (as afterburner, which is in turn abated by A-20 & A-22 baghouses) and A-21 & A-25 baghouses.**

By: (signed by Faye Bruno) Date: 01/08/2013  
Faye Bruno  
Air Quality Engineer II



**ENGINEERING EVALUATION  
AB&I Foundry; PLANT # 62; APPLICATION # 24310**

**Background**

AB&I Foundry (AB&I) owns and operates a facility located in Oakland, California. AB&I has been in operation since 1906 producing iron products. Cast iron pipe and fittings from recycled iron are the foundry's main product line.

AB&I has submitted an application for the following sources:

- S-7 Metal Induction Furnace (pipe), Liquimetrics, Model Unknown, 8000 lb Capacity, 0.5 MMBTU/hr**
- S-8 Metal Induction Furnace (other parts), Liquimetrics, Model 10KFE, 8000 lb Capacity, 0.5 MMBTU/hr**
- S-9 Metal Induction Furnace (pipe), Liquidmetrics, Model 10KFE, 10000 lb Capacity, 0.5 MMBTU/hr**
- S-10 Metal Induction Furnace (other parts), Liquidmetrics, Model 10KFE, 10000 lb Capacity, 0.5 MMBTU/hr**
- S-14 Fittings Dip Barrel**
- S-46 Sand Storage Bunker, Waste Sand, Water Treatment Sludge, Virgin Sand**
- S-47 Storage Piles, 13000 cubic feet, Coke, Limestone, Slag**
- S-50 Slurry Mix Stations, Four, 300 gal Each**

Sources S-7 through S-10 and S-14 were previously recorded in the District's records as exempt sources since 1977. However, in 1983 Regulation 2-1-116 and 2-1-119 was adopted by the District. In Section 2-1-116.2, permit exemption was allowed only for crucible furnaces, pot furnaces, induction furnaces, cupolas, electric arc furnaces, reverberatories, or blast furnaces with a capacity of 1000 lbs or less each. In Section 2-1-119.2, permit exemption was allowed only if less than 30 gallons of coating or less than 1% VOC coating was used. As a result, Sources S-7 through S-10 and S-14 lost their exemption in 1983. Per Regulation 2-1-401.6 and 2-1-424, AB&I has submitted this application for their loss of exemption. Back Fees for 5 years and permit to operate fees were charged.

Sources S-46, S-47, and S-50 were previously not included in the District's records as either exempt or permitted sources, even though they existed with sources S-7 through S-10 and S-14 to produce iron products. These sources were all built in 1975. This was likely a mistake in determining what was a source by both AB&I and the District since AB&I has been inspected by the District many times since the District came into existence. The District considers S-46, S-47, and S-50 as existing sources (not new or modified).

**Emissions**

S-7 through S-10 Metal Induction Furnaces

The particulate emission factors of 0.032 lb filterable particulate (PM10) per ton of iron and 0.0093 condensable PM10 per ton of iron are taken from Tables 12.5.1-1 and 12.5.1-2 of AP-42 Chapter 12.5.1, Steel Minimills, for reheating furnaces. These factors are on a lb/ton basis.

The following are recent (2012-2013) annual throughputs and PM emissions for the furnaces:

Source	Throughput (TPY)	PM10 (Filterable) (lb/yr)	PM10 (Condensable) (lb/yr)	PM10 Total (lb/yr)	PM10 Total (TPY)
S-7	16,000	512	149	661	0.33
S-8	2,150	69	20	89	0.05
S-9	11,603	371	108	479	0.24
S-10	9,798	313	91	404	0.20
<b>Total</b>					<b>0.82</b>

The NO<sub>x</sub>, CO, and VOC emission factors of 0.19 lb NO<sub>x</sub>/MMBTU, 0.0013 lb CO/MMBTU, and 0.0003 lb VOC/MMBTU are taken from Tables 12.5.1-4, 12.5.1-5, and 12.5.1-8 of AP-42 Chapter 12.5.1, Steel Minimills, respectively, for reheating furnaces. AB&I assumes that about 3600 MMBTU/yr of natural gas is burned at each of these sources (S-7 through S-10), which is equivalent to 0.5 MMBTU/hr for 7,200 hrs/yr.

NO<sub>x</sub>: (3,600 MMBTU/yr)(0.19 lb/MMBTU)(4) = 2,736 lbs/yr = 1.4 TPY  
 CO: (3,600 MMBTU/yr)(0.0013 lb/MMBTU)(4) = 19 lbs/yr = 0.009 TPY  
 VOC: (3,600 MMBTU/yr)(0.0003 lb/MMBTU)(4) = 4 lbs/yr = 0.002 TPY

These sources (S-7 through S-10) were installed in 1975 and are neither new nor modified, so the emissions will be added to the inventory but not to their cumulative increase.

S-14 Fittings Dip Barrel

This source is a coating operation which has existed since 1975. According to the MSDS for the coating used currently, it has a VOC content of 0.9 lb/gal (<10% solvent in coating). The coating used in 1975 had a much higher VOC content according to the data form submitted at the time (54% solvent in coating). In the 1977 data form submitted, AB&I indicated coating usage of 20,000 gallons of coating per year. AB&I has requested the same coating usage with this application. As a result, the estimated emissions from this source are the following:

$$POC = 20,000 \text{ gal/yr}(0.9 \text{ lb/gal}) = 18,000 \text{ lbs/yr} = 9 \text{ TPY}$$

This source (S-46) was installed in 1975 and is neither new nor modified, so the emissions will be added to the inventory but not to their cumulative increase.

### S-46 Sand Storage Bunker

#### Drop Operations

The loading and unloading emissions Equation 1 of AP-42, Chapter 13.2.4, Aggregate Handling and Storage Piles is used to estimate emissions of the drop operations into the Sand Storage Bunker. The 2012-2013 actual throughput of waste sand, water treatment sludge, and virgin sand are: 1,200 TPY, 200 TPY, and 1,500 TPY, respectively. Hence, total throughput is 2,900 TPY.

$$E = k(0.0032)[U/5]^{1.3}/[M/2]^{1.4}$$

Where, E = PM10 emission factor (lb/ton)  
k = particle size multiplier for 10 microns = 0.35  
U = mean wind speed (mph) = 8.3  
M = material moisture content (%) = 0.25%

$$E = 0.35(0.0032)[8.3/5]^{1.3}/[0.25/2]^{1.4}$$
$$E = 0.04 \text{ lb/ton}$$

$$\text{PM10} = 2,900 \text{ TPY}(0.04 \text{ lb/ton})(4 \text{ transfer points}) = 461 \text{ lbs/yr} = 0.231 \text{ TPY}$$

#### Wind Erosion

The wind erosion factor of 3.5 lb/acre/day TSP is taken from the 4<sup>th</sup> Edition of AP-42, Section 8.19, Table 8.19.1-1(for storage piles at crushing and grinding plant).

The Sand Storage Bunker is approximately 4,700 square feet or 0.11 acre, per AB&I.

Per the 4<sup>th</sup> Edition of AP-42, Section 8.19, PM10 emissions are 50% of the TSP emission factor for wind erosion, the following PM10 emissions are estimated for wind erosion:

$$\text{PM10} = 0.11 \text{ acre}(3.5 \text{ lb/acre/day})(365 \text{ day/yr}) (50\%) = 70 \text{ lb/yr} = 0.035 \text{ TPY}$$

#### Haul Roads

The waste sand, waste sludge, and virgin sand are brought in and taken away by truck. A front end loader moves it to and from the storage site. The trucks are assumed to weigh 15 tons unloaded and 40 tons loaded. The front loaders are assumed to weigh 12.5 tons unloaded. The bucket in the front loader has a capacity of 1.75 cubic yards. According to AB&I, the density of the waste and virgin sand loaded is assumed the same and approximately 1.42 ton per cubic yard. The waste sludge is assumed similar to mud and approximately 1.22 tons per cubic yard. Therefore, the maximum front loader weight is assumed to be 15.0 tons. The total throughput of materials moved is 2,900 TPY. Hence, the amount of front loader trips is estimated to be 1,360:

$$\# \text{ of Trips} = 2,900 \text{ ton/yr} / (1.22 \text{ ton/yd}^3)(1.75 \text{ yd}^3/\text{trip}) = 1,358.3 \text{ (round up to 1,360)}$$

The average truck round trip is estimated to be 980 feet or 0.2 miles. The average front loader trip is estimated to be 560 feet or 0.1 miles. About 232 trucks will call at the facility to deliver materials to and from the source per year.

Emissions from haul roads are estimated using Equation 1 of AP-42 Chapter 13.2.1.3:

$$E = k(sL)^{0.91}(W)^{1.02}$$

Where, E = particulate emission factor (lb/VMT)  
 k = particle size multiplier for 10 microns = 0.0022  
 sL = road surface silt loading factor for low averaging daily traffic = 0.6  
 W = average weight (tons) of the vehicles traveling the road = 27.5 for trucks,  
 14.55 for front loaders

$$E = 0.0022(0.6)^{0.91}(27.5)^{1.02} = 0.041 \text{ lb/VMT for truck}$$

$$E = 0.0022(0.6)^{0.91}(14.55)^{1.02} = 0.021 \text{ lb/VMT for front loader}$$

$$\text{VMT} = 0.2 \text{ miles}(232 \text{ trucks/yr}) = 46 \text{ VMT/yr for trucks}$$

$$\text{VMT} = 0.1 \text{ miles}(2)(1360 \text{ trips}) = 272 \text{ VMT/yr for front loaders}$$

$$\text{PM}_{10} = 0.041 \text{ lb/VMT}(46 \text{ VMT/yr}) + 0.021 \text{ lb/VMT}(272 \text{ VMT/yr}) = 7.6 \text{ lb/yr} = 0.004 \text{ TPY}$$

The total PM10 emissions from transfers, wind erosions, and haul roads at S-46 is 0.27 TPY:

$$\text{PM}_{10} = 0.231 + 0.035 + 0.004 = 0.27 \text{ TPY}$$

This source (S-46) was installed in 1975 and is neither new nor modified, so the emissions will be added to the inventory but not to their cumulative increase.

#### S-47 Storage Piles, 13000 Cubic Feet

##### Drop Operations

The loading and unloading emissions Equation 1 of AP-42, Chapter 13.2.4, Aggregate Handling and Storage Piles is used to estimate emissions of the drop operations into the Storage Piles. The actual throughput of coke, limestone, and slag are: 13,540 TPY, 17,200 TPY, and 7,320 TPY, respectively.

$$E = k(0.0032)[U/5]^{1.3}/[M/2]^{1.4}$$

Where, E = PM10 emission factor (lb/ton)  
 k = particle size multiplier for 10 microns = 0.35  
 U = mean wind speed (m/s) = 8.3  
 M = material moisture content (%) = 0.25% for coke and slag, 0.20 for limestone,

$$E = 0.35(0.0032)[8.3/5]^{1.3}/[0.25/2]^{1.4}$$

$$E = 0.04 \text{ lb/ton for coke and slag}$$

$$E = 0.35(0.0032)[8.3/5]^{1.3}/[0.2/2]^{1.4}$$

$$E = 0.05 \text{ lb/ton for limestone}$$

$$\text{PM}_{10} = (13,540 + 17,200 \text{ TPY})(0.04 \text{ lb/ton})(2 \text{ transfer points}) +$$

$$7,320 \text{ TPY}(0.05 \text{ lb/ton})(2 \text{ transfer points}) = 3,191 \text{ lbs/yr}$$

$$= 1.6 \text{ TPY}$$

### Wind Erosion

The wind erosion factor of 3.5 lb/acre/day is taken from the wind erosion emission factor for storage piles at crushing and grinding plants in the 4<sup>th</sup> Edition of AP-42, Section 8.19, Table 8.19.1-1.

The Storage Piles is approximately 18,375 square feet or 0.42 acre, per AB&I.

Per the 4<sup>th</sup> Edition of AP-42, Section 8.19, the PM10 emissions are 50% of the TSP emission factor for wind erosion, the following PM10 emissions are estimated for wind erosion:

$$\text{PM10} = 0.42 \text{ acre}(3.5 \text{ lb/acre/day})(365 \text{ day/yr}) (50\%) = 268 \text{ lb/yr} = 0.134 \text{ TPY}$$

### Haul Roads

Limestone is hauled by truck to the facility. Coke is delivered by rail (separate railcar emissions are calculated on the following page). A front-end loader moves these materials to the storage piles. The slag is produced on site and is loaded onto trucks for disposal. The limestone and slag trucks are assumed to weigh 15 tons unloaded and 40 tons loaded. The front loaders are assumed to weigh 12.5 tons unloaded. The bucket in the front loader has a capacity of 1.75 cubic yards. According to AB&I, the density of the coke, limestone, and slag are estimated to be 1.28 tons per cubic yard, 2.09 tons/cubic yard, and 2.32 tons per cubic yard, respectively. Therefore, the maximum front loader weight is assumed to be 16.56 tons.

The average truck round trip is estimated to be 980 feet or 0.2 miles. The average front loader trip is estimated to be 560 feet or 0.1 miles. About 295 limestone trucks and 690 slag trucks will call at the facility to deliver materials to and from the source per year.

The amount of front loader trips is estimated to be 12,550:

$$\begin{aligned} \# \text{ of Trips} &= 13,540 \text{ ton/yr}/(1.28 \text{ ton/yd}^3)(1.75 \text{ yd}^3/\text{trip}) + \\ &17,200 \text{ tons/yr}/(2.09 \text{ ton/yd}^3)(1.75 \text{ yd}^3/\text{trip}) + \\ &7,320 \text{ tons/yr}/(2.32 \text{ tons/yd}^3)(1.75 \text{ yd}^3/\text{trip}) = 12,548 \text{ (round up to 12,550)} \end{aligned}$$

Emissions from haul roads are estimated using Equation 1 of AP-42 Chapter 13.2.1.3:

$$E = k(sL)^{0.91}(W)^{1.02}$$

Where, E = particulate emission factor (lb/VMT)  
k = particle size multiplier for 10 microns = 0.0022  
sL = road surface silt loading factor for low averaging daily traffic = 0.6  
W = average weight (tons) of the vehicles traveling the road = 27.5 for trucks,  
14.55 for front loaders

$$E = 0.0022(0.6)^{0.91}(27.5)^{1.02} = 0.041 \text{ lb/VMT for truck}$$

$$E = 0.0022(0.6)^{0.91}(14.55)^{1.02} = 0.021 \text{ lb/VMT for front loader}$$

$$\text{VMT} = 0.2 \text{ miles}(295 + 690 \text{ trucks/yr}) = 197 \text{ VMT/yr for trucks}$$

$$\text{VMT} = 0.1 \text{ miles}(12,550 \text{ trips}) = 1255 \text{ VMT/yr for front loaders}$$

$$PM10 = 0.041 \text{ lb/VMT}(197 \text{ VMT/yr}) + 0.021 \text{ lb/VMT}(1255 \text{ VMT/yr}) = 34 \text{ lb/yr} = 0.017 \text{ TPY}$$

Railcar Emissions (for the delivery of coke)

Material throughput: 13,540 TPY  
Weight of Material per railcar: 100 tons  
Railcar Tare Weight: 40 tons  
Distance traveled within BAAQMD – 100 rail miles

KTM – thousand ton-miles  
KGTM – thousand gross ton-miles

Total Railcar per year = (13,540 TPY)/100 tons = 140 rail car per year (rounded up)  
Laden = (40 tons/railcar) + (100 tons material/railcar) = 140 tons  
Annual Unladen miles = [(40 ton/railcar)(140 railcar/year)(100 miles)]/1000 = 560 KTM  
Annual Laden miles = [(140 tons/railcar)(140 railcar/year)(100 miles)]/1000 = 1960 KTM  
Total annual KTM = (560 KTM) + (1920 KTM) = 2480 KTM

District approved railroad system factors used in Permit Condition # 7216, USS POSCO

Union Pacific (laden & unladen) = 1.02 gallon/KGTM  
(1.02 gal/KGTM)(2480 KTM/yr) = 2530 gallons/yr = 2.5 Kgallons/yr

Pollutant	Emission Factor, lbs/Kgallons (1)	Annual Emissions lbs/year	TPY
PM10	13.22	33	0.02
NOx	379.96	950	0.47
SOx	14.37	36	0.02
CO	60.35	151	0.08
POC	21.15	53	0.03

(1) emission factors from Permit condition # 7216 – USS Posco for Line haul engines  
The total PM10 emissions from transfers, wind erosions, haul roads, and railcars at S-46 is 0.26 TPY:

$$PM10 = 1.6 + 0.134 + 0.017 + 0.02 = 1.8 \text{ TPY}$$

This source (S-46) was installed in 1975 and is neither new nor modified, so the emissions will be added to the inventory but not to their cumulative increase.

### S-50 Slurry Mix Stations

AP-42 Chapter 13.2.4, Aggregate Handling and Storage Piles, was used to estimate emissions from this source because bags of minex, bootblack, and bentonite are cut and dropped into mixing vessels to make a slurry from the materials with soap and water. Bentonite is clay. Minex is a nepheline syenite. Bootblack is a core and mold coating containing graphite and kolin, montmorillonite, steatite, clay, carbon and silica.

The equation is:

$$E = k(0.0032)[((U/5)^{1.3})/((M/2)^{1.4})]$$

Where, E = emission factor (lb/ton)  
k = particle size multiplier for 10 microns = 0.35  
U = mean wind speed (mph) = 8.3  
M = moisture content (%) = 0.25%

$$E = (0.35)(0.0032)[((8.3/5)^{1.3})/((0.25/2)^{1.4})]$$

E = 0.04 lb/ton

Approximately 3210 TPY of materials is mixed through the source. Hence, the estimated PM10 emissions from S-50 are:

$$PM10 = 3210 \text{ TPY}(0.04 \text{ lb/ton}) = 128 \text{ lb/ton} = 0.06 \text{ TPY}$$

This source (S-50) was installed in 1975 and is neither new nor modified, so the emissions will be added to the inventory but not to their cumulative increase.

#### CUMULATIVE INCREASE

Because all the sources of this application are loss-of-exemption sources, there is no cumulative increase as a result of this application to permit these loss-of exemption sources (S-7 through S-10, S-14, S-46, S-47, and S-50)

#### Statement of Compliance

##### Regulation

In general, the particulate sources at AB&I are subject to the operating standards of Regulation 6. These sources are expected to comply with the standards of Ringlemann 1 in section 6-1-310. The grain loading standard is Section 6-1-310 and process weight standard in Section 6-1-311 do not apply because emissions are fugitive.

##### BACT

BACT is not triggered for the sources because none of them are new or modified.

##### Water's Bill

The project is not within 1000 feet from the nearest school. Therefore, this application is not subject to the public notification requirements of Regulation 2-1-412.

##### Toxics Risk Screening

A toxic risk screening was not required because the sources are not considered new or modified.

#### Offsets

Because there is no cumulative increase for this application, offsets are not required.

#### CEQA

This application for loss-of-exemption sources does not trigger CEQA because these sources were in existence before promulgation of the CEQA standards.

#### PSD, NSPS, NESHAPS

Because this application results in no increase of PSD emissions (e.g., carbon monoxide), this project is not subject to PSD review. There is currently no applicable NSPS Subpart in 40 CFR 60.

The NESHAP for Iron and Steel Foundry Area Sources was issued on January 2, 2008. In the NESHAP, the U.S. Environmental Protection Agency issued emission standards based on generally available control technology (GACT) for the control of Urban Hazardous Air Pollutants that are emitted from metal melting furnaces at large area sources. The NESHAP also established pollution prevention management practices based on GACT that apply to all area source foundries. The pollution prevention management practices reduce HAP emissions of organics, metals, and mercury generated from furnace charge materials and prohibit the use of methanol as a component of binder formulations in certain applications. AB&I complies with the NESHAP. They have a diligent pollution prevention management system in place and do not use methanol as a component in any binders.

S-14 is subject to NESHAP 40 CFR 63, Subpart M, National Emission Standards for Hazardous Air Pollutants for Surface Coating of Miscellaneous Metal Parts and Products. Operation of S-14 complies with the NESHAP because the coating complies with the NESHAP limit of 1.9 lb/gal organic HAP/gal.

#### Permit Conditions

None.

#### Recommendation

I recommend issuance of Permits to Operate for the following:

- S-7 Metal Induction Furnace (pipe), Liquimetrics, Model Unknown, 8000 lb Capacity, 0.5 MMBTU/hr**
- S-8 Metal Induction Furnace (other parts), Liquimetrics, Model 10KFE, 8000 lb Capacity, 0.5 MMBTU/hr**
- S-9 Metal Induction Furnace (pipe), Liquidmetrics, Model 10KFE, 10000 lb Capacity, 0.5 MMBTU/hr**
- S-10 Metal Induction Furnace (other parts), Liquidmetrics, Model 10KFE, 10000 lb Capacity, 0.5 MMBTU/hr**
- S-14 Fittings Dip Barrel**
- S-46 Sand Storage Bunker, Waste Sand, Water Treatment Sludge, Virgin Sand**



- S-47 Storage Piles, 13000 cubic feet, Coke, Limestone, Slag**
- S-50 Slurry Mix Stations, Four, 300 gal Each**

It is noted that S-51 which was originally included in this application has been transferred to Application # 24453 for review, as agreed upon by AB&I.

By: (signed by M.K. Carol Lee) 2/27/2014  
M.K. Carol Lee Date  
**Senior Air Quality Engineer**

**ENGINEERING EVALUATION**  
**AB&I Foundry; PLANT # 62; APPLICATION # 24453**

**Executive Summary**

***Main Issue***

This application covers changes that ABI made to the Cupola (the first step in the process where gray iron is melted) and associated downstream equipment. The Cupola (S-1) was installed in 1962, and was therefore a *grandfathered* source. The primary issue for this application is whether the changes to the Cupola, or downstream equipment, result in the Cupola being a *modified source* as defined in Reg. 2-1-234, or simply an *alteration* (no emission increase, the term Alter is defined in Reg. 2-1-233).

***Resolution***

**The District will impose a new daily throughout limit of 513 tons of gray iron melted in the Cupola, S-1 and a metal to coke ratio of no less than 10:1, on a mass basis.** Because the Cupola is the first step in the process, limiting throughput and coke burned at S-1 effectively limits emissions from S-1, and production levels at all downstream sources as well. These new limits ensure that daily emissions will not increase above grandfathered levels. ABI already has an annual production limit which ensures that annual emissions will not increase. Therefore, there is no emission increase associated with the changes to the Cupola, or downstream equipment. That being the case, equipment changes in this application will be evaluated as alterations.

**Introduction**

AB&I Foundry (AB&I) owns and operates a facility located in Oakland, California. AB&I has been in operation since 1906 producing iron products. Cast iron pipe and fittings from recycled iron are the foundry's main product line.

AB&I conducted an internal audit of their air permit status of the various operating units at their facility in 2009. As a result of that internal audit, AB&I determined that they had changed existing permitted equipment and added new equipment that might require District permits. As a result, they submitted applications to try to remedy their discovered deficiencies.

Most of the deficiencies have been remedied and permits to operate issued as part of applications 21488 (Hot Dip Coating), 21603 (Pipe Finishing Dip Tank), 24156 (Fiber Bed Mist Collector), and 24310 (Loss of Exemption Sources). This application is for the remaining changes that require permit review and evaluation.

**Rationale for Resolution**

ABI maintains that the capacity of the Cupola has not changed from the original capacity of 50 tons of metal melted per hour, because the physical size (diameter) of the Cupola has not changed. However, some of the changes that ABI made to the Cupola (like a larger combustion air blower) could potentially affect metal melting rate, and therefore emissions. Changes to downstream equipment (additional barrel and larger diameter barrels in Pipe machines, faster DISA line, etc.) could also be viewed as potentially debottlenecking the overall production process, resulting in an increase in metal melting and downstream processing.

A *modified source* is defined in Reg. 2-1-234 as:

- 2-1-234 Modified Source:** Any existing source that undergoes a physical change, change in method of operation, increase in throughput or production, or addition and that results or may result in any of the following:
- 234.1 An increase in either the daily or annual emission level of any regulated air pollutant, or an increase in the production rate or capacity that is used to estimate the emission level, that exceeds emission or production levels approved by the District in any authority to construct.
  - 234.2 An increase in either the daily or annual emission level of any regulated air pollutant, or the production rate or capacity that is used to estimate the emission level, above levels contained in a permit condition in any current permit to operate or major facility review permit.
  - 234.3 For sources that have never been issued a District authority to construct and that do not have conditions limiting daily or annual emissions, an increase in either daily or annual emission level of any regulated air pollutant, or the production rate or capacity that is used to estimate the emission level, above the lower of the following:
    - 3.1 The highest of the following:
      - 3.1.1 The highest attainable design capacity, as shown in pre-construction design drawings, including process design drawings and vendor specifications.
      - 3.1.2 The capacity listed in the District permit to operate.
      - 3.1.3 The highest documented actual levels attained by the source prior to March 1, 2000.
    - 3.2 The capacity of the source, as limited by the capacity of any upstream or downstream process that acts as a bottleneck (a grandfathered source with an emission increase due to debottlenecking is considered to be modified).  
For the purposes of applying Section 234.3, only increases in annual emission levels shall be considered for storage vessels.
  - 234.4 The emission of any regulated air pollutant or toxic air contaminant not previously emitted in a quantity that would result in a cancer risk (as defined in Regulation 2-5-206) greater than 1.0 in a million ( $10^{-6}$ ) or a chronic hazard index (as defined in Regulation 2-5-208) greater than 0.20.
- For the purposes of applying this definition, an hourly limit or capacity may be converted to a daily limit or capacity by multiplication by 24 hours/day; a daily capacity may be converted to an annual capacity or limit by multiplication by 365 days/year.

To paraphrase Reg. 2-1-234, a modified source is a source which undergoes a change that will result in an increase in daily or annual emissions, relative to one the following:

- The emission level approved in an Authority to Construct (2-1-234.1);
- The emission level in a permit condition (2-1-234.2); or
- The emission level based on the capacity of a grandfathered source (2-1-234.3)

The Cupola (S-1) has an annual emission limit of 172,800 tons of gray iron, but it does not have a daily limit. Because the Cupola was a grandfathered source, Section 2-1-234.3 is used to determine whether or not the changes to S-1 are a modification. Based on production records, ABI was able to demonstrate an achieved daily production level of 513 tons prior to March 1, 2000. In addition, a metal to coke ratio of 12:1 was identified in Application 14438 for historic data (1997-99) and more recent data (2005), prior to making the changes to the Cupola and other equipment. However, closer review of the data showed that the 12:1 ratio mentioned in

Application 14438 did not include the coke that is added into the Cupola bed before any metal is added. Coke is still burned in the bed at the end of operating day and a new bed is created each day prior to the metal process is to start. Hence, it seems reasonable that the ratio to monitor is total coke used per day, including that added to the bottom column or “bed” of the Cupola. Looking at the total metal to total coke ratio for years prior to the alteration (prior to 2000), the total gray metal to total coke ratio is 10:1. Total metal includes cast iron, pig iron, steel, and return. Returns are the portion of metal that is not part of the poured casting, such as the gate and risers that are made during the casting process. They are a necessarily to make a casting but are separated during the molding process, once the poured casting solidifies. The returns are sent back to the Cupola for reuse.

To ensure that the alteration did not change the amount of coke consumed, this new total metal to coke ratio will be added as a limit. The 10:1 total metal to coke ratio will be based on a annual consecutive twelve month average, to allow for fluctuations due to temperature, moisture, etc. These limits satisfy the capacity demonstration allowed under Section 2-1-234.3.1.3.

## **Changes to Sources**

### Cupola

S-1 Cupola; abated by A-20 Afterburner #1 and A-22 Afterburner #2; abated by A-19 Baghouse

S-1 Cupola is a grandfathered source (pre-1972) that was altered in 2006. Essentially the top half of the S-1 Cupola was cut away and its emission control system was replaced and a heat exchanger also added. The existing combustion air blower (i.e. hot blast) was replaced with a recuperative hot blast that uses the cupola off-gases to preheat the combustion air. The existing 350HP combustion air blower motor was replaced with a variable speed 400 HP motor. A larger gearbox was installed on the cupola charging bucket system (feed to cupola) to decrease the material delivery time to the cupola. However, the diameter size of the Cupola remained unchanged at 90 inches.

The gray iron throughput of the S-2 Cupola is limited by Permit Condition # 9351, Part 7 to 172,800 tons per year. This limit was set as part of Application # 14438 when AB&I provided substantiating documentation to the District of the capacity of S-1 Cupola. The throughput limit was based on 50 tons per hour sustained maximum capacity, running 18 hours per day, 4 days per week, and 48 weeks per year maximum.

### DISA 270

- S-2 Pouring, Cooling, Shakeout; abated by A-12, A-14, and A-18 Baghouse
- S-58 Moldmaking – Vertical, DISA 270
- S-59 Moldmaking – Vertical, DISA 2013

DISAMATIC (DISA) is an automatic production line used for fast manufacturing of sand molds for sand casting of metal (iron). AB&I had two DISA lines (DISA 2070 and 2013).

They were parallel systems that ran independent of each other, except that they used the same sand recycling system and finishing operations after parts are cast. In 2005 the DISA 270 replaced the old DISA 2070 system. Both units (DISA 2070 and 270) produced the same size

mold, except the DISA 270 (capacity of 375 cored molds per hour) is 30% faster than the DISA 2070 (capacity of 250 core molds per hour).

The DISA system starts when the sand mold is made and the core is inserted into the mold under pressure. Each mold is then pushed forward like slices in a loaf of bread and packed tightly together. The molds are transferred to a "walking beam" conveyor, moving forward one mold at a time. Molten iron is poured into the molds which are transferred approximately 20 feet to allow the molds to cool down before being transferred to a rubber belt conveyor that is approximately 50 feet long. By the end of the conveyor, the casting is solidified enough to separate from the sand. At that point, the mold passes through several oscillators to break down the mold and then ultimately sent through the MD 300 Didion where the casting is separated from the sand. At that point, the sand is sent back to the sand handling system (S-3) and the casting is sent on to be finished, where it goes through a final cleaning (grinding) and dipping process.

When AB&I installed the new DISA 270, the machine was a direct replacement of the DISA 2070. They kept the existing belt conveyor, oscillators and the Didion 200. Later they did put in a new "walking beam" conveyor and replaced the existing Didion MD 200 with a used rotary drum (Didion MD 300) and oscillator pan #5 and rebuilt oscillator pan #6. They also had to move the pouring furnace (S-10) four feet. The DISA 2013 has its own pour furnace which has not changed (S-8).

The replaced rotary drum and new walking beam conveyors and oscillator pans (Oscillating Pan # 5 and rebuilt Oscillating Pan #6) are part of the permitted source, S-2 Pouring, Cooling, Shakeout. The DISA molding machines are exempt from permitting requirements per Regulation 2-1-122.3 because they are shell core and shell-mold manufacturing machines. However, this application will add these exempt sources to the source list (as S-58 and S-59).

S-2 Pouring, Cooling, Shakeout was altered by the replacement of the walking beam conveyors and rotary drum and oscillating pans. The purpose of the drum is to separate the newly poured casting from the sand mold. The sand is sent back to be recycled (via the oscillating pans) and the casting is sent to the cleaning room. The drum is abated by baghouse number 4 (A- 18) and has negative pressure, suction, at both inlet and outlet ends.

The pouring (or casting) of iron into the molds made in the two DISA lines is limited by Permit Condition # 23650 Part 8 to 36,000 tons per year and requires the control of the lines by baghouses (A-18 and A-21). A-21 has a grain loading limit of 0.01 g/dscf. AB&I has not requested any changes to the existing permit conditions. S-2 is controlled by baghouses with a grain loading limit of 0.01 g/dscf. Since the throughput and grain loading limit are not changing, there is no emission increase associated with this alteration of S-2 Pouring, Cooling, Shakeout and it is not a modified source.

The processing of sand in the facility is limited by Permit Condition # 2237, Part 9 to 572,000 tons per year. AB&I has not requested any changes to the existing permit conditions, which requires that S-3 Sand Preparation with Sand Cooler be controlled by a baghouse a grain limit of 0.04 g/dscf. Since the throughput and grain loading limit are not changing, there is no emission increase associated with the alteration of S-3 Sand Preparation with Sand Cooler and it is not a modified source.

### Centrifugal Casting Changes

- S-53 Pipe Casting Machine P-2
- S-54 Pipe Casting Machine P-3
- S-55 Pipe Casting Machine P-4
- S-56 Pipe Casting Machine P-5
- S-57 Pipe Casting Machine P-6

During the late 1990s and early 2000s several changes were made to the centrifugal casting operations including the following: the addition of a third barrel of Pipe Machine # 2, change from a 12" to a 15" pipe diameter capacity in Pipe Machine # 1, and a change of Pipe Machine # 4 that would allow the machine to accommodate 2-10" diameter pipes instead of 2-8" diameter pipes. The pipe machines at the facility at AB&I are exempt from permitting requirements per Regulation 2-1-122.1, because they are molds used for the casting of metal. Hence, the changes performed in late 1990s and early 2000s are not considered actions requiring permits. However, this application will add these exempt sources to the source list (S-53 through S-56).

### Specialty Finishing Paint Dip Tanks

- S-51 Specialty Finishing Paint Dip Tanks (80 gallon capacity Tank 1, 120 gallon Tank 2, and 160 gallon capacity Tank 3)
  
- S-60 Storage Tank, 250 Gallon Capacity

Most of AB&I production is casting pipe and fittings, but they also have custom castings which they also process through the DISA lines. Currently, this is a small portion of the products they cast. However, they want to add a coating dip source (S-51) for these products using a water-based acrylic coating. S-51 is a new source which was put in without a permit in 2005; late and back fees have been charged. S-60 is storage tank for coating which is exempt from permitting requirements per Regulation 2-1-123.1 for organic liquid storage tanks which have a capacity of less than 260 gallons.

### Emissions

A cupola is a melting device used in foundries that can be used to melt cast iron. The size of a cupola is expressed in diameter. The overall shape is cylindrical and the equipment is arranged vertically, usually supported by four legs. The overall look is similar to a large smokestack.

The bottom of the cylinder is fitted with doors which swing down and out to 'drop bottom'. The top where gases escape can be open or fitted with a cap to prevent rain from entering the cupola. To control emissions a cupola may be fitted with a cap that is designed to pull the gases into a device to cool the gases and remove particulate matter.

To begin a production run, the furnace is filled with layers of coke and ignited. When the coke is ignited, air is introduced to the coke bed through ports in the sides. When the coke is very hot, solid pieces of metal are charged into the furnace through an opening in the top. The metal is alternated with additional layers of fresh coke. Limestone is added to act as a flux. As the heat rises within the stack the metal is melted. It drips down through the coke bed to collect in a pool

at the bottom, just above the bottom doors. During the melting process a thermodynamic reaction takes place between the fuel and the blast air. The carbon in the coke combines with the oxygen in the air to form carbon monoxide and carbon dioxide. Some of the carbon is picked up by the falling droplets of molten metal which raises the carbon content of the iron. Additions to the molten iron such as ferromanganese, ferrosilicon, silicon carbide and other alloying agents are used to alter the metallurgy of the final product, as needed.

When the metal level in the cupola is sufficiently high, the cupola operator opens the "tap hole" to let the metal flow into a ladle or other container to hold the molten metal. After the cupola has produced enough metal to supply the foundry with its needs, the bottom is opened, or 'dropped' and the remaining materials fall to the floor between the legs. This material is allowed to cool and subsequently removed.

Casting is a manufacturing process by which a molten metal is usually poured into a mold, which contains a hollow cavity of the desired shape, and then allowed to solidify. The solidified part is also known as a casting, which is ejected or broken out of the mold to complete the process.

Sand casting, also known as sand molded casting, is a metal casting process characterized by using sand as the mold material. The term "sand casting" can also refer to an object produced via the sand casting process. The sand is moistened, typically with water, but sometimes with other substances, to develop strength and plasticity of the clay and to make the aggregate suitable for molding. The sand is typically contained in a system of frames or mold boxes known as a flask.

In 1962, Dansk Industri Syndikat A/S (DISA-DISAMATIC) invented a flask-less molding process by using vertically parted and poured molds. The mold cavities and gate system are created by compacting the sand around models, or patterns, or carved directly into the sand.

### S-1 Cupola

AB&I typically start the S-1 Cupola up around 4:00 am and produces iron by 5:30 am. The S-1 Cupola runs up to 4:00 pm, unless the holding furnace (S-25) is full, then it would be 3:30 pm.

S-1 Cupola has a maximum design capacity of 50 tons/hr, but AB&I typically run S-1 Cupola between 20 and 35 tons/hr. AB&I has stipulated that the capacity of S-1 Cupola didn't change after the alteration of S-1 Cupola in 2006. What did change is the efficiency and the response to changes in operations. Before the alteration, the Cupola was entirely manually operated. Now the controls are computerized and instant, but the melt rate of the Cupola is essentially unchanged. The speed of loading the cupola with feed materials did increase by two seconds, but again the melt rate of the Cupola is essentially unchanged.

To ensure that there is no resulting daily emissions increase as a result of the alteration, AB&I has agreed to the daily throughput limit of 513 tons per day to reflect the maximum operating capacity of the S-1 Cupola before its alteration in 2006. Review of Cupola Charging Material logs for the years prior to March 2000, the highest daily documented daily level was 513 tons on 7/7/1998. By limiting the daily throughput to 513 tons, there is no annual or daily emissions increase at S-1 Cupola and it is not a modified source.

### S-2 Pouring, Cooling, Shakeout

S-2 Pouring, Cooling, Shakeout source, which occurs after the sand molds are made in either DISA 270 and 2013 mold machines was altered by the replacement of the walking beam conveyors and rotary drum and oscillating pans. The purpose of the rotary drum is to separate the newly poured casting from the sand mold. The sand is sent back to be recycled (via the oscillating pans) and the casting is sent to the cleaning room. Both rotary drums are abated by baghouse number 4 (A- 18).

The pouring (or casting) of iron into the molds made in the two DISA lines is limited by Permit Condition # 23650 Part 8 to 36,000 tons per year and requires the control of the lines by baghouses (A-18 and A-21). A-21 has a grain loading limit of 0.01 g/dscf. AB&I has not requested any changes to the existing permit conditions. S-2 is controlled by baghouses with a grain loading limit of 0.01 g/dscf. Since the throughput and grain loading limit are not changing, there is no emission increase associated with this alteration of S-2 Pouring, Cooling, Shakeout and it is not a modified source.

### S-3 Sand Preparation with Sand Cooler

The processing of sand in the facility is limited by Permit Condition # 2237, Part 9 to 572,000 tons per year. AB&I has not requested any changes to the existing permit conditions, which requires that S-3 Sand Preparation with Sand Cooler be controlled by a baghouse a grain limit of 0.04 g/dscf. Since the throughput and grain loading limit are not changing, there is no emission increase associated with the alteration of S-3 Sand Preparation with Sand Cooler and it is not a modified source.

### S-51 Specialty Finishing Paint Dip Tanks

AB&I has requested coating usage limits of:

Water Reducible Black Rust Inhibitor (VOC = 0.55 lb/gal) = 1000 Gallon  
Aqua Corrosion Resistant Grey (VOC = 0.88 lb/gal) = 500 Gallon

As a result, the cumulative increase of this new source is:

$$\text{POC/NPOC} = 1000 \text{ gal/yr}(0.55 \text{ lb/gal}) + 500 \text{ gal/yr}(0.88 \text{ lb/gal}) = 990 \text{ lbs/yr} = 0.5 \text{ TPY}$$

### Exempt Sources

S-60 is storage tank for coating which is exempt from permitting requirements per Regulation 2-1-123.1 for organic liquid storage tanks which have a capacity of less than 260 gallons. The Storage Tank (S-60) shall store black coating with a VOC content (0.55 lb/gal). The solvent emissions from the use of the coating have been estimated in the use of the dip coating tanks (S-51). Hence, negligible emissions are estimated from this storage tank.

The DISA molding machines are exempt from permitting requirements per Regulation 2-1-122.3 because they are shell core and shell-mold manufacturing machines. The emissions from the DISA molding machines are particulate due to the use of sand for the making of the molds. Sand and water are premixed (in S-3 Sand Preparation with Sand Cooler) before they are injected into the molds and compressed to make the sand molds.



The pipe machines at the facility at AB&I are exempt from permitting requirements per Regulation 2-1-122.1, because they are metal molds used for the casting of metal. The emissions from the pipe casting machines are particulate due to the use of sand for the making of the molds. Sand and water are premixed (in S-50 Slurry Mix Stations) before they are injected into the molds.

The emissions from the handling of sand with water are estimated using the emission factor for sand handling, transfer and storage with venture scrubber from AP-42 Table 11.19-1 (Emission Factor for Industrial Sand and Gravel Processing):

$$\text{Emission Factor} = 0.0013 \text{ lb/ton}$$

The processing of sand in the facility is limited by Permit Condition # 2237, Part 9 to 572,000 tons per year. For all the molding operations combined together, the estimated emission is:

$$\text{PM}_{10} = 572,000 \text{ TPY}(0.0013 \text{ lb/ton}) = 744 \text{ lb/yr} = 0.4 \text{ TPY}$$

There is no cumulative increase estimated for these exempt sources.

**CUMULATIVE INCREASE SUMMARY**

	Emissions Increase					
	NO <sub>x</sub>	SO <sub>2</sub>	PM <sub>10</sub>	POC	NPOC	CO
Existing	0		0.011	4.597	0	0.230
New				0.5 (from S-51)		0.5
Contemporaneous Reductions						0.5 *

\*Footnote: Contemporaneous Reduction from the shutdown of S-13 Dip Tank which was determined as part of Application No. 21488. Approximately 9 tons of year of contemporaneous reductions remain from Application No. 21488 for use through June 2015.

**Statement of Compliance**

**Applicable District Regulations**

In general, the particulate sources at AB&I are subject to the operating standards of Regulation 6. There sources are expected to comply with the standards of Ringlemann 1 in section 6-1-310. S-1, S-2, and S-3 are abated by baghouses. Each of the baghouses are required to perform source testing as required by their facility permit condition # 25039 (Compliance Assurance Monitoring) to verify compliance with Regulation 6-1 and 40 CFR Part 63, Subpart EEEEE.

The coating operation (S-51) is subject to and will be in compliance with the VOC requirements of Regulation 8-19, Coating of Miscellaneous Metal Parts and Products. The VOC of the coating is below the limit of 2.8 lb/gal from Regulation 8-19-302.

### **BACT**

Because the alterations of S-1 Cupola, S-2 Pouring, Cooling, Shakeout, and S-3 Sand Preparation and Cooling do not result in any daily or annual emissions increase, they are not modified sources subject to New Source Review or BACT.

S-51 Specialty Finishing Paint Dip Tank does not trigger Best Available Control Technology (BACT) review because emissions from this source are not estimated to exceed 10 lbs/day.

### **Water's Bill**

The project is not within 1000 feet from the nearest school. Therefore, this application is not subject to the public notification requirements of Regulation 2-1-412.

### **Toxics Risk Screening**

The grey coating used in S-51 Specialty Finishing Paint Dip Tank contains 1% ammonia by weight. Both coatings contain 5% 2-butoxyethanol by weight. Following is a calculation of the potential emissions of toxics compared to their respective trigger levels:

Ammonia = 440 lb/yr(1%) = 4.4 lb/yr < 7.1 lb/hr and 7,700 lb/yr (toxics trigger)

2-butoxyethanol = 990 lb/yr(5%) = 49.5 lb/yr (est. worst-case 5 lb/hr) < 31 lb/hr (toxics trigger)

Source S-51 does not trigger a health screening analysis.

### **Offsets**

The existing cumulative increase of the facility for NO<sub>x</sub> and POC is zero and the increase associated with this application (POC = 0.5 TPY) shall be offset from onsite contemporaneous emission reduction credit of Application # 24453 for the shutdown of S-13.

### **CEQA**

Because the alterations of S-1 Cupola, S-2 Pouring, Cooling, Shakeout, and S-3 Sand Preparation and Cooling do not result in any daily or annual emissions increase, they are not modified sources subject to CEQA. S-51 Specialty Finishing Paint Dip Tank was permitted using ministerial procedures of the Permit Handbook (Chapter 5.1). As a result, CEQA is not triggered.

### **PSD, NSPS, NESHAPS**

Because the alterations of S-1 Cupola, S-2 Pouring, Cooling, Shakeout, and S-3 Sand Preparation and Cooling do not result in any daily or annual emissions increase, they are not modified sources subject to New Source Review or PSD. There is currently no applicable NSPS Subpart in 40 CFR 60.

The NESHAP for Iron and Steel Foundries (40 CFR Part 63, Subpart EEEEE) applies to AB&I. They comply with the following applicable standards of the NESHAP and these standards are integrated into their Title V permit which requires that they source test to prove compliance with the grain loading and other emission limits and have continuous temperature monitors. Also, they have a scrap selection plan. All these requirements are indicated on pages 20-28 of their

Title V permit and specified in their facility Compliance Assurance Monitoring permit condition # 25039.

63.7690 (a)

(2) (i) Less than 0.006 gr/dscf of PM [Existing Cupola]

(5) (i) less than 0.010 gr/dscf of PM [Pouring station]

(7) Less than 20% Fugitive Emissions

(8) Less than 20ppm of VOHAP

63.7690 (b)

(3) 15 min average > 1300 F

63.7700

Scrap selection plan

S-51 is subject to NESHAP 40 CFR 63, Subpart M, National Emission Standards for Hazardous Air Pollutants for Surface Coating of Miscellaneous Metal Parts and Products.

Operation of S-14 complies with the NESHAP because the coating complies with the NESHAP limit of 1.9 lb/gal organic HAP/gal, because the HAP content of the coatings themselves are less than 0.9 lb/gal.

### **Permit Conditions**

I recommend the following conditions for S-51 Specialty Finishing Paint Dip Tanks (Condition # 25748):

1. The owner/operator of S-51 shall not exceed the following usage limits during any consecutive twelve-month period:

Water Reducible Black Rust Inhibitor	1000 Gallons
Aqua Corrosion Resistant Grey	500 Gallons

(Basis: Cumulative Increase)
2. The owner/operator may use coating(s) or cleanup solvent(s) other than the materials specified in Part 1 and/or usages in excess of those specified in Part 1, provided that the owner/operator can demonstrate that all of the following are satisfied:
  - a. Total POC emissions from S-51 do not exceed 990 pounds in any consecutive twelve month period;
  - b. Total NPOC emissions from S-51 do not exceed 990 pounds in any consecutive twelve month period; and
  - c. The use of these materials does not increase toxic emissions above any risk screening trigger level of Table 2-5-1 in Regulation 2-5.

(Basis: Cumulative Increase; Toxics)
3. To determine compliance with the above parts, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above parts, including the following information:
  - a. Quantities of each type of coating and cleanup solvent used at this source on a monthly basis.

- b. If a material other than those specified in Part 1 is used, POC/NPOC and toxic component contents of each material used; and mass emission calculations to demonstrate compliance with Part 2, on a monthly basis;
- c. Monthly usage and/or emission calculations shall be totaled for each consecutive twelve-month period.

All records shall be retained on-site for two years, from the date of entry, and made available for inspection by District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable District Regulations. (Basis: Cumulative Increase; Toxics)

S-1 Cupola is currently subject to the following permit conditions (Condition # 9351). I recommend the following change to the permit conditions: [strikethroughs indicate deletions while underlines indicate additions]

COND# 9351 -----

Conditions for S-1 Cupola:

abated by A-20 Afterburner, A-22 Afterburner and A-19  
Baghouse Application 13813, January 18, 2006 Application  
14757, October 6, 2006 Application 18833, November 2008, Application  
24453, April 2014.

- 1. The owner/operator of S-1 Cupola shall operate the A-20 and A-22 Afterburners such that the 15-minute average combustion zone temperature does not fall below 1300 degrees F. Periods when the cupola is off blast and for 15 minutes after going on blast from an off blast condition are not included in the 15-minute average. (basis: 40 CFR 63.7690 (b)(3))
- 2. To demonstrate compliance with part 1, the owner/operator of S-1 shall install, operate, and maintain a continuous temperature monitor and recorder to measure and record the combustion zone temperature of A-20 and A-22. (basis: Regulation 1-521)
- 3. The owner/operator shall retain the temperature records required in part 2 on site for a minimum of five years from the date of record and ~~made~~ make them available to District representatives upon request. (basis: cumulative increase, BAAQMD Regulation 2-6-501)
- 4. The sulfur content of the coke used at S-1, Cupola, shall not exceed 1.0 percent by weight as a surrogate means for ensuring compliance with BAAQMD Regulation 9-1-304. The owner/operator will obtain a certification of the sulfur content of the coke for each delivery to assure compliance with this condition. The fuel certification records shall be retained on site for a minimum of five years from the date of entry and be made available to District representatives upon request. In the event the coke sulfur content exceeds 1.0 percent by

weight, the owner/operator shall arrange for a one time source test of S-1 at the time said coke is used to demonstrate that higher level of coke sulfur content will not produce gas stream emissions at A-19 Baghouse that will exceed the limit established in BAAQMD Regulation 9-1-304.

If the sulfur dioxide emissions do not exceed the limit, the owner/operator shall be allowed to use coke with a sulfur content at or below the sulfur content of the coke used for the source test. In the event the coke sulfur content exceeds the new limit for coke sulfur content established in the source test, the owner/operator shall again arrange for a one time source test of S-1 at the time said coke is used to demonstrate that higher level of coke sulfur content will not produce gas stream emissions at A-19 Baghouse that will exceed the limit established in BAAQMD Regulation 9-1-304. The owner/operator shall notify the Source Test Group at the BAAQMD at least seven days before any source test is performed. (basis: BAAQMD Regulation 9-1-304, BAAQMD Regulation 2-6-501)

5. ~~[Deleted, replaced by CAM condition]~~The owner/operator shall ensure that the ratio of total metal (includes scrap iron, steel, returns, and pig iron) to coke charged into S-1 Cupola shall not fall below a ratio of 10:1, on a mass basis, averaged over a consecutive twelve month period. (basis: Regulation 2-1-234.3.1).
6. ~~[Deleted, replaced by CAM condition]~~The owner/operator shall ensure that the daily total metal throughput for S-1 Cupola shall not exceed 513 tons totaled in any calendar day. (basis: Regulation 2-1-234.3.1)
7. The owner/operator shall ensure that the annual ~~gray iron~~ total metal throughput for S-1 Cupola shall not exceed 172,800 tons totaled over any consecutive twelve month period. (basis: Regulation 2-1-403)
8. Unless otherwise indicated in specific permit conditions, the owner/operator shall maintain the following records for each permitted source:
  - ~~1.a. monthly daily~~ material throughput, including charge material (total metal and coke) to the cupola for S-1, and
  - b. monthly material throughput (sum of daily throughput for month),
  - c. total metal:coke ratio, averaged over consecutive twelve month period,
  - d. monthly natural gas to the A-20 and A-22 afterburners
  - ~~be~~ .total material throughput for the preceding 12 months(basis: Regulation 2-1-123.3.1, 2-1-403)
9. The owner/operator shall ensure that the firing rate of

the A-20 Afterburner shall not exceed 8 million Btu/hour. (basis: Cumulative Increase).

10. The owner/operator shall ensure that the firing rate of the A-22 Afterburner shall not exceed 8 million Btu/hour. (basis: Cumulative Increase)
11. The owner/operator shall perform District-approved source tests at least once every 5 years for PM, opacity, CO, VOC, SO<sub>2</sub>, NO<sub>x</sub>, lead. The owner/operator shall obtain approval for all source test procedures from the District's Source Test Section prior to conducting any tests. The owner/operator shall comply with all applicable testing requirements as specified in Volume V of the District's Manual of Procedures. The owner/operator shall notify the District's Source Test Section in writing of the source test protocols and projected test dates at least 7 days prior to testing. All measurements, records, and data for each source test shall be retained by the owner/operator for at least five years and made available to the District upon request. (basis: Regulation 2-1-403)

S-2 Pouring, Cooling, Shakeout is current subject to the following permit conditions (# 23650). AB&I has requested no increase in throughput or any other change of conditions. However, the following editorial corrections are recommended: [strikethrough indicates deletions, while underlines indicate additions.

COND# 23650 -----

For S-2 Pouring, Cooling, Shakeout abated by A-14 Baghouse\_#2, A-18 Baghouse\_#4, and A-21 Baghouse#5

1. The owner/operator shall abate S-2 Pouring, Cooling, Shakeout with A-14 Baghouse\_#2, A-21 Baghouse\_#5, and A-18 Baghouse\_#4 during all periods of operation. (basis: cumulative increase)
2. [Deleted. Replaced by CAM condition]
3. [Deleted. Replaced by CAM condition]
4. The owner/operator shall ensure A-21 Baghouse No.\_5 outlet grain loading does not exceed 0.01 gr/dscf. (basis: cumulative increase; 40 CFR 63.7690(a)(5)(i))
5. [Deleted. Moved sand throughput limit to S-3 Sand Preparation]
6. Unless otherwise indicated in specific permit

conditions, the owner/operator shall maintain the following records for S-2:

- a. monthly throughput of iron poured
- b. total material throughput for the preceding 12 months

6. (basis: Regulation 2-1-403)

- 7. The owner/operator shall perform District-approved source tests at least once every 5 years for VOC to demonstrate compliance with Regulation 8, Rule 2. The owner/operator shall obtain approval for all source test procedures from the District's Source Test Section prior to conducting any tests. The owner/operator shall comply with all applicable testing requirements as specified in Volume V of the District's Manual of Procedures. The owner/operator shall notify the District's Source Test Section in writing of the source test protocols and projected test dates at least 7 days prior to testing. All measurements, records, and data for each source test shall be retained by the owner/operator for at least five years and made available to the District upon request. (basis: Regulation 2-1-403)

- 8. The owner/operator shall ensure total iron cast in ~~sand molds~~ [S-58](#) and [S-59](#) at this facility shall not exceed 36,000 tons in any consecutive 12-month period. (basis: cumulative increase)

S-3 Sand Preparation and Cooling are currently subject to the permit conditions (# 2237). AB&I has requested no increase in throughput or any other change of conditions. There are no changes recommended for Permit Condition # 2237, which is shown below for informational purposes:

COND# 2237 -----

### S-3 Sand Preparation

- 1. [Deleted. Iron casting limit moved to condition for pouring.]
- 2. S-3 Sand Preparation shall be continuously abated by A-15 Baghouse #1, Pulse Jet, U.S. Air Filtration Model 4614 -PT-120-6, during all periods of operation of S-3. (basis: cumulative increase)
- 3. The owner/operator shall maintain A-15 Baghouse #1 in good operating condition at all times according to manufacturers' and /or District recommendations.

(basis: cumulative increase)

4. The outlet grain loading of A-15 Baghouse #1 shall not exceed 0.04 gr/dscf. (basis: cumulative increase)
5. The owner/operator shall maintain monthly records of good iron casting production in a District-approved log. These records shall be retained on site for a minimum of five years from the date of entry and made available to District representatives upon request. (basis: cumulative increase, BAAQMD Regulation 2-6-501)
6. [Deleted, replaced by CAM condition]
7. [Deleted, replaced by CAM condition]
8. [Deleted, redundant throughput limit]
9. The annual gross sand throughput at S-3 Sand Preparation shall not exceed 572,000 tons totaled over any consecutive twelve month period.
10. Unless otherwise indicated in specific permit conditions, the operator shall maintain the following records for S-3 Sand Preparation:
  - a. monthly sand throughput
  - b. total sand throughput for the preceding 12 months (basis: Regulation 2-1-403)

### **Recommendation**

I recommend exemption status for the following:

- S-53 Pipe Casting Machine P-2 (exempt per Regulation 2-1-122.1)
- S-54 Pipe Casting Machine P-3 (exempt per Regulation 2-1-122.1)
- S-55 Pipe Casting Machine P-4 (exempt per Regulation 2-1-122.1)
- S-56 Pipe Casting Machine P-5 (exempt per Regulation 2-1-122.1)
- S-57 Pipe Casting Machine P-6 (exempt per Regulation 2-1-122.1)
- S-58 Moldmaking – Vertical, DISA 270 (exempt per Regulation 2-1-122.3)
- S-59 Moldmaking – Vertical, DISA 2013 (exempt per Regulation 2-1-122.3)
- S-60 Storage Tank, 250 Gallon Capacity (exempt per Regulation 2-1-122.1)

I recommend issuance of Permits to Operate for the following:

- S-51 Specialty Finishing Paint Dip Tanks (80 gallon capacity Tank 1, 120 gallon Tank 2, and 160 gallon capacity Tank 3)



I recommend approval the alterations at the following sources as not modified sources:

- S-1 Cupola; replacement of emission control system, addition of heat exchanger, recuperative hot blast, replacement of 350 HP with 400 HP air blower motor
- S-2 Pouring, Cooling, Shakeout; replacement of DISA 2070 with DISA 270; replacement of belt conveyor, replacement of Didion MD 200 with Didion MD 300, and rebuilt oscillator pan #6.
- S-3 Sand Preparation and Cooling; upstream from S-2

By: (signed by M.K. Carol Lee) 03/24/2014  
M.K. Carol Lee Date  
Senior Air Quality Engineer

## **ENGINEERING EVALUATION AB&I Foundry; PLANT # 62; APPLICATION # 26151**

### **Background**

AB&I Foundry (AB&I) owns and operates a facility located in Oakland, California. AB&I has been in operation since 1906 producing iron products. Cast iron pipe and fittings from recycled iron are the foundry's main product line.

AB&I has submitted an application for the following:

#### **S-61 P4 Pipe Machine, ABI, 3 Barrel**

S-61 will be a replacement to their existing two barrel P4 Pipe Machine (S-55). AB&I intends to replace the two barrel pipe casting machine and add a third barrel to it. The other pipe casting machines (S-53, S-54, S-56, and S-57) at the facility already have three barrels.

The pipe machines at the facility at AB&I are exempt from permitting requirements per Regulation 2-1-122.1, because they are molds used for the casting of metal. The replacement of S-55 with S-61 will not require any daily or annual increase of throughput to the S-1 Cupola. As a result, the replacement of S-55 with S-61 will cause neither an alteration nor a modification to the sources that ultimately feed molten iron to S-61.

To paraphrase Reg. 2-1-234, a modified source is a source which undergoes a change that will result in an increase in *daily* or *annual* emissions, relative to one the following:

- The emission level approved in an Authority to Construct (2-1-234.1);
- The emission level in a permit condition (2-1-234.2); or
- The emission level based on the capacity of a grandfathered source (2-1-234.3)

The Cupola (S-1) has an annual emission limit of 172,800 tons of gray iron and a daily limit of 513 tons per day and a required minimum metal to coke ratio of 10. AB&I does not request increase to these limits. S-1 is not modified or altered.

### **Emissions**

The pipe machines at the facility produce pipe from injected molten iron using the centrifugal casting process. Sand, clay, and water are premixed (in S-50 Slurry Mix Stations) to make the internal "lining" of the pipe. The liquid slurry is injected into the pipe cast using centrifugal action. As the molten iron is formed in the mold the internal area of the pipe is created by the centrifugal injection of slurry mix. Most of the PM10 from this operation is from the actual mixing of the materials in the Slurry Mix Stations (S-50):

AP-42 Chapter 13.2.4, Aggregate Handling and Storage Piles, was used to estimate emissions from this source because bags of minex, bootblack, and bentonite are cut and dropped into mixing vessels to make a slurry from the materials with soap and water. Bentonite is clay. Minex is a nepheline syenite. Bootblack is a core and mold coating containing graphite and kolin, montmorillonite, steatite, clay, carbon and silica.

The equation is:

$$E = k(0.0032)[((U/5)^{1.3})/((M/2)^{1.4})]$$

Where, E = emission factor (lb/ton)  
k = particle size multiplier for 10 microns = 0.35  
U = mean wind speed (mph) = 8.3  
M = moisture content (%) = 0.25%

$$E = (0.35)(0.0032)[((8.3/5)^{1.3})/((0.25/2)^{1.4})]$$
$$E = 0.04 \text{ lb/ton}$$

Approximately 3210 TPY of materials is mixed through the source. Hence, the estimated PM10 emissions from S-50:

$$\text{PM10} = 3210 \text{ TPY}(0.04 \text{ lb/ton}) = 128 \text{ lb/yr} = 0.06 \text{ TPY}$$

The emissions from the pipe machines are not estimated to be any greater than those of the slurry mix stations.

The pipe machines at the facility at AB&I are exempt from permitting requirements per Regulation 2-1-122.1, because they are metal molds used for the casting of metal. From research on the topic, this type of pipe casting is not estimated to cause emission which would exceed the backstop provisions of Regulation 2-1-319.

There is no cumulative increase estimated for this exempt source (S-61).

## **Statement of Compliance**

### **Applicable District Regulations**

The pipe machines at the facility at AB&I are exempt from permitting requirements per Regulation 2-1-122.1, because they are metal molds used for the casting of metal. In addition, S-61 is subject to and expected to be in compliance with Regulation 6-1.

## **BACT**

BACT is not triggered for an exempt source (S-61).

## **Water's Bill**

The project is not within 1000 feet from the nearest school. Therefore, this application is not subject to the public notification requirements of Regulation 2-1-412.

## **Toxics Risk Screening**

There are no binders or coatings used in S-61. As a result, no toxic emissions are estimated. Source S-61 does not trigger a health screening analysis.

## **Offsets**

There is no cumulative increase for an exempt source (S-61). Hence, offsets are not triggered.

## **CEQA**

CEQA is not triggered for an exempt source (S-61).

## **PSD, NSPS, NESHAPS**

Because there are no alterations or modification of S-1 Cupola, this application is not subject to New Source Review or PSD. There is currently no applicable NSPS Subpart in 40 CFR 60.

The NESHAP for Iron and Steel Foundries (40 CFR Part 63, Subpart EEEEE) applies to AB&I. They comply with the following applicable standards of the NESHAP and these standards are integrated into their Title V permit which requires that they source test to prove compliance with the grain loading and other emission limits and have continuous temperature monitors. Also, they have a scrap selection plan. All these requirements are indicated on pages 20-28 of their Title V permit and specified in their facility Compliance Assurance Monitoring permit condition # 25039.

### 63.7690 (a)

- (2) (i) Less than 0.006 gr/dscf of PM [Existing Cupola]
- (5) (i) less than 0.010 gr/dscf of PM [Pouring station]
- (7) Less than 20% Fugitive Emissions
- (8) Less than 20ppm of VOHAP

### 63.7690 (b)

- (3) 15 min average > 1300 F

### 63.7700

Scrap selection plan

**Permit Conditions**

None.

**Recommendation**

I recommend exemption status for the following:

**S-61 Pipe Casting Machine P-4 (exempt per Regulation 2-1-122.1)**

By: (signed by M.K. Carol Lee) 04/14/2014  
M.K. Carol Lee Date  
**Senior Air Quality Engineer**