3.0 EMISSION ESTIMATES

Similar to the existing foundry operations at ACM, the new facility is being designed to operate three (3) shifts per day. Consistent with the discussion in the permit support document for Permit Nos. 139-96B and 139-96C for the existing ACM foundry operations, preventive maintenance, repair and replacement activities are expected to restrict the new facility operations on an annual basis. These activities will include electric induction furnace brick re-lining and other routine maintenance activities and are expected to limit the maximum annual production of the new facility to approximately 115,500 tons of liquid iron per year (equivalent to an operation of 7,000 hrs/yr at 16.5 ton/hr). The emission calculations presented in the remainder of this section are based upon an annual production limit of 115,500 tons of iron melt or an equivalent annual operation of 7,000 hrs/yr.

3.1 PM/PM_{10} Emissions

The emissions from the processes and process equipment described in Section 2 will be collected using properly designed hoods and/or enclosures and then routed to one of the following four baghouses: metal melting and pouring (MP) baghouse; mold cooling and shakeout (MCS) baghouse; sand system (SS) baghouse; or the castings cooling and finishing (CCF) baghouse.

The applicable PM NESHAP limit for each electric induction furnace at the new expansion foundry is 0.001 grain PM per dry standard cubic feet (gr/dscf) of exhaust gas (or 0.00008 grain of total metal HAP/dscf) and the applicable PM NESHAP limit for each pouring area or pouring station at the new expansion foundry is 0.002 gr PM/dscf (or 0.0002 gr/dscf of total metal HAP). The MP baghouse will be designed to meet a PM outlet loading of 0.001 gr/dscf, and will control emissions from both operations.

The MCS, SS and CCF baghouses will be designed to each meet a PM/PM_{10} outlet grain loading of 0.005 gr/dscf of exhaust gas. This limit is based on the best available control technology (BACT) requirement under PSD regulation at 40 CFR 52.21(j). A BACT analysis is presented in Section 5 of this document. After the baghouse control devices, all of the PM is assumed to be less than 10 μm in diameter (PM_{10}).

The rated flow rate for the MP baghouse is 64,180 scfm at 68 °F, while the rated flow rates for the MCS, SS and CCF baghouses are 57,137 scfm, 69,206 scfm, and 70,526 scfm, respectively (Total flow = 196,869 scfm).

The following calculations illustrate the determination of the hourly and annual PM_{10} emission rates from the four baghouses. As the MCS, New SS, and CCF baghouses will be designed to achieve the same outlet PM loadings, the combined PM_{10} emission rates from these baghouses are presented in the calculations.

$$\text{Hourly } PM_{10} \text{ Emissions}_{MP} = \frac{0.001\ gr}{dscf} \times \frac{lb}{7{,}000\ gr} \times \frac{64{,}180\ dscf}{minute} \times \frac{60\ mins}{hour} = \frac{0.55\ lb\ PM_{10}}{hour}$$

$$\text{Annual } PM_{10} \text{ Emissions}_{MP} = \frac{0.55\ lb\ PM_{10}}{hour} \times \frac{7{,}000\ hours}{year} \times \frac{ton}{2{,}000\ lbr} = \frac{1.93\ tons\ PM_{10}}{year}$$

$$\text{Hourly } PM_{10} \text{ Emissions}_{MCS/SS/CCF} = \frac{0.005\ gr}{dscf} \times \frac{lb}{7{,}000\ gr} \times \frac{196{,}869\ dscf}{minute} \times \frac{60\ mins}{hour} = \frac{8.44\ lb\ PM_{10}}{hour}$$

$$\text{Annual } PM_{10} \text{ Emissions}_{MCS/SS/CCF} = \frac{8.44\ lb\ PM_{10}}{hour} \times \frac{7{,}000\ hours}{year} \times \frac{ton}{2{,}000\ lbs} = \frac{29.53\ tons\ PM_{10}}{year}$$

As shown in the preceding calculations, the PM_{10} emission rates from the MP baghouse are expected to be 0.55 lb/hr and 1.93 tpy, and the combined PM_{10} emission rates from the MCS, SS and CCF baghouses are expected to be 8.44 lb/hr and 29.53 tpy. Thus the total combined PM_{10} emission rates from the new facility will be 9.0 lb/hr and 31.5 tpy.

3.2 Volatile Organic Compounds (VOC) Emissions

The estimation of VOC emissions from the new facility is based upon EPA emission factors, studies conducted by the Casting Emission Reduction Program (CERP), and the NESHAP requirements.

MP VOC Emission Rates

Based upon a review of available literature, there is little data relating to the VOC emissions resulting from melting operations conducted in electric induction furnaces. The U.S. EPA's FIRE Database, Version 6.23, contains an emission factor of 0.14 lb VOC/ton of iron poured (SCC 3-04-003-20). To account for possible VOC emissions during the electric induction furnace melting operations, the FIRE Database VOC emission factor for cupola and electric arc furnace melting (SCC 3-04-003-01 and 3-04-003-04, respectively) of 0.18 lb VOC/ton of iron has been used. The following calculations present the estimated VOC emissions from EU-MP.

$$\text{VOC } Emission\ Factor_{MP} = \frac{0.18\ lb\ VOC_{Melting}}{ton\ iron} + \frac{0.14\ lb\ VOC_{Pouring}}{ton\ iron} = \frac{0.32\ lb\ VOC}{ton\ iron}$$

$$Hourly\ VOC\ Emission\ Rate_{MP} = \frac{0.32\ lb\ VOC}{ton\ iron} \times \frac{16.5\ tons\ iron}{hour} = \frac{5.28\ lb\ VOC}{hour}$$

$$Annual\ VOC\ Emission\ Rate_{MP} = \frac{5.28\ lb\ VOC}{hour} \times \frac{7{,}000\ hrs}{year} \times \frac{ton}{2{,}000\ lbs} = \frac{18.48\ tons\ VOC}{year}$$

Thus, the expected VOC emission rate from the melting and pouring operations, which will be discharged from the MP baghouse, are approximately 5.28 lb/hr and 18.5 tons per year. It should be noted that the exhaust gases during pouring that will be routed to the MP baghouse are those that will be collected near the pouring spout and associated stopper rod, above the pouring sprues in the green sand molds. A portion of the pouring emissions may also be collected within the mold cooling hoods and routed to the MCS baghouse.

MCS VOC Emission Rates

A review of available literature did not reveal any EPA emission factors for mold cooling operations and foundry sand systems. The U.S. EPA's FIRE Database contains an emission factor of 1.2 lbs VOC/ton iron for shakeout operations. In addition, the applicable VOHAP limit under NESHAP Subpart EEEEE for mold cooling and shakeout lines is 20 ppmv (as hexane).

Based on the MCS baghouse exhaust gas flow rate of 57,137 scfm, the VOC concentration of 20 ppmv (as hexane) equates to a mass VOC emission rate of 15.3 lb/hr. This is equivalent to a VOC emission factor of 0.93 lb/ton of iron melt.

The following calculations present the expected VOC mass emission rates (as hexane) from the MCS baghouse.

$$Hourly\ VOC\ Emission\ Rate_{MCS} = \frac{20\ ft^3\ Hexane}{10^6\ ft^3\ exh.\ gas} \times \frac{57{,}137\ ft^3}{min} x \frac{60\ min}{hour} x \frac{lb\ mole}{385.3\ ft^3} x \frac{86\ lb\ Hexane}{lb\ mole} = \frac{15.33\ lb}{hr}$$

$$Annual\ VOC\ Emission\ Rate_{MCS} = \frac{15.33\ lb}{hour} \times \frac{7{,}000\ hours}{year} x \frac{ton}{2000\ lb} = \frac{53.7\ tons}{year}$$

Therefore, the estimated VOC emission rates (measured as hexane) from EU-MCS are 15.33 lb/hr and 53.7 tons per year.

SS VOC Emission Rates

The VOC emissions from EU-SS are estimated at 4 lb/hr and 14 tpy, based on a VOC emission factor of 0.24 lb VOC/ton of iron melt from studies conducted by the Casting Emission Reduction Program (CERP).

Table 3-1 presents a summary of the expected VOC emission rates from the three exhaust stacks associated with the new facility. The VOC emission rates summarized in Table 3-1 are expected values. While ACM is confident that the annual VOC emission rates from the new facility will not exceed 86 tons per year, the emission factors used to estimate the VOC emission rates from each of the individual exhaust stacks will be verified through stack testing.

Table 3-1. Estimated VOC Emission Rates for the New Facility

Parameter	MP Baghouse Outlet Stack	MCS Baghouse Outlet Stack	SS Baghouse Outlet Stack	Total Combined Emissions
Hourly Emissions, **Lb/hour** [1]	5.3	15.3	3.96	***24.6***
Lb/ton of iron melt	0.32	0.93	0.24	***1.49***
Annual Emissions, **tons/year** [2]	18.5	53.7	13.9	***86.0***

[1] The hourly emission rates are based upon a melt rate of 16.5 tons per hour.
[2] The annual emission rates are based upon a maximum production of 16.5 tons/hr *7,000 hrs/year = 115,500 tons of iron per year.

3.3 Carbon Monoxide Emissions

Based on the equipment layout and exhaust gas distribution through the four (4) baghouses at the new expansion foundry, EU-MP and EU-MCS will be the only two major sources of CO emissions and it is assumed that all of the CO emissions will be discharged through the MP and MCS baghouse stacks. The CO emissions from EU-SS will be negligible because the hot end sand system including shakeout operations will be vented through the MCS baghouse and the CO emissions are not expected from EU-CCF.

MP and MCS CO Emission Rates

While the U.S. EPA has published CO emission factors for iron melting operations conducted in cupola and electric arc furnaces, EPA factors for melting operations in electric induction furnaces are not available (AP-42 document lists CO as negligible). Based upon ACM's current permit (139-96C) for the existing facility, the CO emission factors are as follows:

- Metal melting, pouring, and mold cooling operations: 5.75 lb CO/ton of iron melt (MPCC baghouse)
- Sand system and shakeout operations: 0.75 lb CO/ton of iron melt (SS baghouse)

These are the site-specific worst-case emission factors, based on stack emission testing conducted for the existing foundry operations using sand molds with cores. Stack emission testing was also conducted for the operations using sand molds without cores. The CO emission rates were lower when the cores were not used. At the new expansion foundry, the annual production using cores will be approximately 20% of the total annual production. Therefore, the actual annual CO emission rate will be lower than the potential annual CO emission rate, based on the worst-case emission factors.

At the existing facility, the potential sources of CO emissions are ducted to two baghouses. At the new expansion foundry, the potential sources of CO emissions will also be ducted to two baghouses. However, the equipment layout and exhaust system configurations are quite different for the new expansion facility than for the existing facility. At the existing facility, pouring and mold cooling emissions are vented to the melting, pouring, and mold cooling (MPCC) baghouse, whereas at the new facility, pouring and mold cooling emissions will be vented to two separate baghouses. The pouring station emissions will be vented to the melting and pouring (MP) baghouse, and the mold cooling emissions will be vented to the mold cooling and shakeout (MCS) baghouse for the new process. Therefore, the potential CO emission rate from the new facility will be based on a combined CO emission factor of 5.75 + 0.75 = 6.50 lb CO/ton of iron melt, which will be distributed as follows:

- Metal melting and pouring (EU-MP) – 2.7 lb CO/ton of iron melt
- Mold cooling and shakeout (EU-MCS) – 3.8 lb CO/ton of iron melt.

The following calculations illustrate the expected CO emissions rates from the MP and MCS baghouses.

$$Hourly\ CO\ Emission\ Rate_{MP} = \frac{2.7\ lb\ CO}{ton\ iron} \times \frac{16.5\ tons\ iron}{hour} = \frac{44.55\ lb\ CO}{hour}$$

$$Annual\ CO\ Emission\ Rate_{MP} = \frac{44.55\ lb\ CO}{hour} \times \frac{7{,}000\ hrs}{year} \times \frac{ton}{2{,}000\ lbs} = \frac{155.93\ tons\ CO}{year}$$

$$Hourly\ CO\ Emission\ Rate_{MCS} = \frac{3.8\ lb\ CO}{ton\ iron} \times \frac{16.5\ tons\ iron}{hour} = \frac{62.7\ lb\ CO}{hour}$$

$$Annual\ CO\ Emission\ Rate_{MCS} = \frac{62.7\ lb\ CO}{hour} \times \frac{7{,}000\ hrs}{year} \times \frac{ton}{2{,}000\ lbs} = \frac{219.5\ tons\ CO}{year}$$

As shown in the preceding calculations, the expected CO emission rates from EU-MP (routed to the MP baghouse) are 44.6 lb/hr and 156 tpy, and the expected CO emission rates from EU-MCS (routed to the MCS baghouse) are 62.7 lb/hr and 219.5 tpy. Since these emission rates are based on the estimated CO emission factors, ACM is requesting a combined CO emission limit of 107.3 lb/hr and 375.5 tpy. The expected CO emission rates from the new facility are summarized in Table 3-2.

Table 3-2. Estimated CO Emission Rates for the New Facility

Parameter	MP Baghouse Outlet Stack	MCS Baghouse Outlet Stack	Total Combined Emissions
Hourly Emissions Lb/hour [1]	44.55	62.7	*107.3*
Lb/ton Metal Melted, Monthly Average	2.7	3.8	*6.5*
Maximum Annual Emissions, **tons/year** [2]	156	219.5	*375.5*

[1] The hourly emission rates are based upon a melt rate of 16.5 tons per hour.
[2] The annual emission rates are based upon a maximum production of 16.5 tons/hr * 7,000 hrs/year = 115,500 tons of iron per year.

3.4 Nitrogen Oxides And Sulfur Dioxide

The nitrogen oxides (NO_x) and sulfur dioxide (SO_2) emission rates from the new facility are expected to be negligible. The potential emissions of NO_x and SO_2 from the new facility have been estimated based upon emission factors contained in the U.S. EPA's FIRE Database, Version 6.23 (emission factors correspond to pouring, SCC: 3-04-003-20).

As noted previously, the NO_x and SO_2 emissions associated with the pouring station will be collected at a hood associated with the pouring spout and associated stopper rod that will be located above the pouring sprues (routed to MP baghouse). It has also been conservatively assumed that the pouring emission factors apply to the iron throughput associated with the downstream mold cooling area. Therefore, the same emissions factors associated with pouring operations will be used to calculate NO_X and SO_2 emission rates from EU-MCS and the associated MCS baghouse. The following calculations illustrate the estimated NO_x and SO_2 emission rates from the MP and MCS baghouses:

$$Hourly\ NO_x\ Emission\ Rate_{MP} = \frac{0.01\ lb\ NO_x}{ton\ iron} \times \frac{16.5\ tons\ iron}{hour} = \frac{0.165\ lb\ NO_x}{hour}$$

$$Annual\ NO_x\ Emission\ Rate_{MP} = \frac{0.165\ lb\ NO_x}{hour} \times \frac{7{,}000\ hrs}{year} \times \frac{ton}{2{,}000\ lbs} = \frac{0.58\ tons\ NO_x}{year}$$

$$Hourly\ SO_2\ Emission\ Rate_{MP} = \frac{0.02\ lb\ SO_2}{ton\ iron} \times \frac{16.5\ tons\ iron}{hour} = \frac{0.33\ lb\ SO_2}{hour}$$

$$Annual\ SO_2\ Emission\ Rate_{MP} = \frac{0.33\ lb\ NO_x}{hour} \times \frac{7{,}000\ hrs}{year} \times \frac{ton}{2{,}000\ lbs} = \frac{1.16\ tons\ SO_2}{year}$$

As shown in the preceding calculations, the estimated hourly and annual NO_x and SO_2 emission rates from EU-MP and associated baghouse are approximately 0.17 lb/hr and 0.60 tpy, and 0.33 lb/hr and 1.20 tpy, respectively. The same NO_x and SO_2 emission rates are expected from the EU-MCS and associated MCS baghouse.

3.5 Lead

Similar to the NO_x and SO_2 emissions from the new facility, the lead (Pb) emissions are also based upon an emission factor contained in the FIRE Database. The emission factor corresponds to the average uncontrolled emission factor for electric induction furnaces (SCC: 3-04-003-03). For purposes of estimating emissions, a minimum control efficiency of 99% by weight has been assumed for the MP baghouse. As shown in the following calculations, the expected hourly and annual lead emission rates are negligible.

$$Hourly\ Pb\ Emissions_{MP} = \frac{0.0545\ lb\ Pb}{ton\ iron} \times \frac{16.5\ tons\ iron}{hour} \times \frac{0.01\ lb\ Pb_{emitted}}{1.0\ lb\ Pb} = \frac{0.009\ lb\ Pb}{hour}$$

$$Annual\ Pb\ Emissions_{MP} = \frac{0.009\ lb\ Pb}{hour} \times \frac{7{,}000\ hrs}{year} \times \frac{ton}{2{,}000\ lbs} = \frac{0.032\ tons\ Pb}{year}$$

3.6 Hazardous Air Pollutant (HAP) Emissions

Emissions data for HAPs, while limited, have been developed through studies conducted by CERP and the reports that were (originally) issued in 1999, 2000, and 2001. CERP is a cooperative initiative between the Department of Defense (McClellan Air Force Base) and the United States Council for Automotive Research (USCAR). Its purpose is to evaluate materials and processes, which could lead to reduced emissions or more efficient production in the ferrous metal casting industry.

Technical partners include the American Foundryman's Society, the U.S. Environmental Protection Agency, and the California Air Resources Board. A copy of the February 7, 2000 report of the "Baseline Testing Emission Results – Production Foundry" was submitted previously in support of Permit No. 139-96B and 139-96C. The CERP test reports can be accessed electronically at the following web site address:

http://www.cerp-us.org/index.cfm?pageID=101

Of the available test reports, the February 7, 2000 report contains a breakdown of the detected HAP emissions from the following four individual processes: sand system, pouring, cooling, and shakeout. While other CERP test reports summarize the emissions from these four foundry processes, the emissions from these four sources were not examined individually (i.e. only the combined pouring, cooling, and shakeout HAP emissions were examined). As discussed previously, the emissions from the new facility will be routed as follows: melting and pouring – MP baghouse; mold cooling, hot end sand system, and shakeout – MCS baghouse; and cool end sand system - SS baghouse.

The CERP emissions tests with aggregate HAP emission factors for pouring, cooling, and shakeout are not transferable to the equipment configuration for the new facility and the February 7, 2000 CERP test report data will be used as the best estimate of HAP emissions from the new facility that are available at this time. The relevant test data is found in Table 3-4 of the February 7, 2000 CERP report document on page 21, and is summarized in Table 3-3 of this document in a manner that corresponds to the ACM emission groupings (i.e. the three baghouses associated with the new facility). A copy of Table 3-4 of the February 7, 2000 CERP report has been included in Appendix B for reference.

Table 3-3. HAP Emission Factors from CERP Data and Estimated HAP Emission Rates [1]

Toxic Air Contaminant	CAS Registry No.	MP Baghouse Stack (lb/ton iron)	MP Baghouse Stack (lb/hour)	MCS Baghouse Stack (lb/ton iron)	MCS Baghouse Stack (lb/hour)	Sand System Baghouse Stack (SS) (lb/ton iron)	Sand System Baghouse Stack (SS) (lb/hour)	Total Emission Rates (lb/hr)	Total Emission Rate (tpy)
Total Organic HAPs	N/A	0.0204	0.337	0.4958	8.181	0.185	3.053	11.57	27.60 [2]
Benzene	71-43-2	0.0148	0.244	0.194	3.201	0.0615	1.015	4.46	15.61
Toluene	108-88-3	0.0017	0.028	0.067	1.097	0.0312	0.515	1.64	5.74
Phenol	108-95-2	ND	ND	0.070	1.157	0.0071	0.117	1.27	4.46
Napthalene	91-20-3	0.0004	0.007	0.032	0.525	0.0161	0.266	0.80	2.79
m,p-Xylene	108-38-3	0.0005	0.008	0.029	0.482	0.0176	0.290	0.78	2.73
o-Xylene	95-47-6	0.0002	0.003	0.011	0.182	0.0097	0.160	0.34	1.21
Hexane	110-54-3	0.0014	0.023	0.011	0.178	0.0032	0.053	0.25	0.89
o-Cresol	95-48-7	ND	ND	0.014	0.233	ND	ND	0.23	0.81
Ethyl Benzene	100-41-4	0.0003	0.005	0.007	0.120	0.0072	0.119	0.24	0.85
Styrene	100-42-5	0.0002	0.003	0.005	0.086	0.0066	0.109	0.20	0.69
Acetyldehyde	75-07-0	0.0002	0.003	0.005	0.081	0.0032	0.053	0.14	0.48
2-Methylnapthalene	91-57-6	ND	ND	0.022	0.366	0.0101	0.167	0.53	1.87
1-Methylnapthalene	90-12-0	ND	ND	0.012	0.198	0.0082	0.135	0.33	1.17

[1] Note that the pound/ton emission factors presented in this table are representative of emissions occurring when cores are used in conjunction with the green molds and represent the worst case emissions from the facility expansion operations.

[2] The total HAP emission factor for all operations combined is 0.7012 lb/ton of iron melt, which is the same as used in ACM's current PTI No. 139-96C. Based on the January 2006 CERP report (Technikon #1412-317NA), the total combined HAP emission factor for non-cored casting production (green sand only) is 0.422 lb HAP/ton iron. Since the new facility will limit the total cored castings production to no more than 20% of the annual potential production of 115,500 tpy iron, the total HAP emissions will be 27.6 tpy or less. See discussion following this table.

Total HAP Emissions (Cored versus Non-cored Production)

The HAP emission factors and mass emission rates presented in Table 3-3 should be viewed as very conservative estimates. The CERP test data that serves as the basis for the Table 3-3 emission factors was obtained during the use of both greensand molds and sand cores containing organic resins. The new ACM facility will utilize sand cores in the casting process in limited quantity, and, based upon the CERP report dated January 2006 (First Publication – AFS Paper 06-031 – Technikon # 1412-317NA; see excerpts in Appendix B), there is a substantial difference in the HAP emissions generated from the pouring, cooling and shakeout emissions associated with greensand mold only casting versus casting using both greensand molds and resin based cores. Table 2 of the 2006 CERP report lists the total HAP emission factors for non-core production as follows:

- Melting Emission factor: 0.006 lb HAP/ton metal
- Pouring, Cooling, Shakeout factor without cores: 0.416 lb HAP/ton metal

Therefore, the total HAP emission factor for green sand mold only production (i.e. non-cored green sand molds) would be the sum of these two factors (0.422 lb HAP/ton). The factor for green sand molds with cores, which is the sum of the Total Organic HAPs factors for all operations from the February 7, 2000 CERP study Table 3-4, is 0.7012 lb HAP/ton metal. For the facility expansion operations, the maximum melt rate for casting production with cores will be approximately 20% of the total production of 115,500 tons, or 23,100 tons iron/year. Therefore, the total HAP emissions would be calculated most accurately as follows:

Expansion production with cores = 23,100 tpy iron (20% of 115,500 tpy total iron)

Expansion production without cores = 92,400 tpy iron (80% of 115,500 tpy total iron)

$$Annual\ HAP\ Emissions = \left(\frac{0.7012\ lb\ HAP_{cores}}{ton\ iron} \times \frac{23{,}100\ ton\ iron}{year}\right) + \left(\frac{0.422\ lb\ HAP_{no\ cores}}{ton\ iron} \times \frac{92{,}400\ ton\ iron}{year}\right)$$

$$Annual\ HAP\ Emissions = \frac{55{,}190.52\ lb\ HAP}{year} \times \frac{1\ ton}{2{,}000\ lb} = \frac{27.6\ ton\ HAP}{year}$$

The CERP report excerpts, along with summary calculations for HAP emissions is included in Appendix B of this application.

Manganese

In addition to the CERP test data, the U.S. EPA's FIRE Database (SCC: 3-04-003-03) also contains emission factors for lead and manganese, which are classified as HAPs, for iron melting in electric induction furnaces. The emission rate of lead has already been quantified (see Section 3.5), and the following calculations illustrate the manganese emissions based upon the FIRE emission factor of 0.0225 lb Mn/ton iron. Similar to the lead emissions, the MP baghouse is assumed to achieve a control efficiency of 99 Wt-%.

$$Mn\ Emissions_{Hourly} = \frac{0.0225\ lb\ Mn}{ton\ iron} \times \frac{16.5\ tons\ iron}{hour} \times \frac{0.01\ lb\ Mn_{emitted}}{1.0\ lb\ Mn} = \frac{0.0037\ lb\ Mn}{hour}$$

$$Mn\ Emissions_{Annual} = \frac{0.0037\ lb\ Mn}{hour} \times \frac{7{,}000\ hours}{year} \times \frac{ton}{2{,}000\ lbs} = \frac{0.013\ ton\ Mn}{year}$$

The selected organic HAP emission factors in Table 3-3 represent nearly all of the detected organic HAP emissions in the CERP emissions study. The maximum expected organic HAP emission rate is 15.6 tons per year of benzene, while the total expected organic HAP emission rate is 40.5 tons per year. The combined emission rate of lead and manganese, based upon the FIRE Database emission factors and a baghouse control efficiency of 99% by weight, is expected to be less than 0.05 tons per year. The following section of the report discusses the applicable state and federal air quality requirements.