ALLEGHENY COUNTY HEALTH DEPARTMENT
AIR QUALITY PROGRAM

April 13, 2016

SUBJECT: Review of Application
Title V Operating Permit
U.S. Steel Edgar Thomson Plant
13th Street and Braddock Avenue
Braddock, PA 15104

RE: Operating Permit File No. 0051
Iron and Steel Making Facility

TO: Sandra L. Etzel
Chief Engineer

FROM: Hafeez Ajenifuja
Air Quality Engineer

FACILITY DESCRIPTION:

The U.S. Steel Edgar Thomson Plant (ET) is an iron and steel making facility that produces mainly steel slabs. Raw materials such as coke, iron-bearing materials, and fluxes are charged to blast furnaces in the iron making process. Molten metal (iron) is tapped from the blast furnace at the casthouse into transfer ladles. The hot metal is then transferred to a hot metal mixer or direct pour station in preparation for desulfurization. For desulfurization, a reagent is added to the hot metal, causing sulfur and other impurities to form and rise to the surface. Desulfurized hot metal is then introduced into the basic oxygen process (BOP), where the hot metal is transformed into molten steel. Scrap, alloys, fluxes, and oxygen are also introduced at the BOP. The liquid steel is tapped from the BOP vessels and transferred to the ladle metallurgy facility (LMF) or Vacuum Degasser, where the properties of the steel can be more precisely refined according to customer specifications. To achieve this additional refining at the LMF or Vacuum Degasser, specific alloying materials are added to the process. The refined liquid steel is then charged to the dual strand continuous caster mold. The steel slabs are formed in the continuous caster and are cut to length, ground, slit as necessary, and shipped offsite.

There are three Riley Boilers at ET, which are used to generate steam, heat, and electricity for the plant. The three primary fuels for the boilers are Blast Furnace Gas (BFG), Coke Oven Gas, (COG), and Natural Gas (NG). The facility will also burn No. 2 fuel oil only during emergency condition.

The facility has two (2) processes that are operated by an outside contractor:

1. BOP Slag Processing; and
2. Waste Product Recycling and Briquetting.

The BOP slag handling system is being operated by Tube City IMS, LLC, while the Waste Product Recycling and Briquette Process is operated by Braddock Recovery Inc., a division of HARSCO/MultiServ Corp.

Both Tube City IMS, Inc. and Braddock Recovery Inc. are located on U.S. Steel-Edgar Thomson property and are considered Title V facilities by the ACHD. These facilities are part of the same major source, act as support facilities to U.S. Steel-Edgar Thomson Plant and will be obtaining their own Title V operating permit in the near future.

In addition, BOC Gases (Linde) is another support facility that is located outside U.S. Steel-Edgar Thomson compound, but supplies oxygen to U.S. Steel-Edgar Thomson Plant. BOC Gases is also supplying gases to other companies, and is therefore not considered a co-located Title V facility at this time.

U.S. Steel-Edgar Thomson Plant, which is located in Braddock, Pennsylvania, is a major source of particulate matter (PM), particulate matter less than 10 microns in diameter (PM_{10}), sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen oxides (NO_x), volatile organic compounds (VOC), and Hazardous Air Pollutants (HAPs), as defined in Section 2101.20 of Article XXI.

The emission units regulated by this permit are summarized in Table 1:

TABLE 1 - Emission Unit Identification

I.D.	SOURCE DESCRIPTION	CONTROL DEVICE(S)	MAXIMUM CAPACITY	FUEL/RAW MATERIAL	STACK I.D.
P001a	Blast Furnace No. 1 Casthouse	Casthouse Baghouse	1,752,000 TPY (Production)	Coke, Iron-Bearing Materials, Fluxes	S002
P001b	Blast Furnace No. 1 Stoves	None	495 MMBtu/hour (total)	BFG, COG & Natural Gas	S001
P001c	BFG Flare	N/A	3 MMcfh	BFG	S003
P002a	Blast Furnace No. 3 Casthouse	Casthouse Baghouse	1,752,000 TPY (Production)	Coke, Iron-Bearing Materials, Fluxes	S002
P002b	Blast Furnace No. 3 Stoves	None	495 MMBtu/hour (total)	BFG, COG & Natural Gas	S004
P003	Basic Oxygen Process (BOP) Shop	Mixer Baghouse, Primary Scrubber, Secondary Baghouse	3, 467,500 TPY (Production)	Hot Metal (Iron), Fluxes, Scrap, Alloy Additives	S005-S008
P004	Ladle Metallurgy Facility (LMF)	LMF Baghouse	3, 467,500 TPY (Production)	Steel (Liquid), Fluxes, Scrap, Alloy Additives	S009
P005	Dual Strand Caster	Dust Collectors	3, 467,500 TPY (Production)	Steel (Liquid), Fluxes	N/A
P006	Vacuum Degasser	CO Flare	1,200,000 TPY (Production)	Steel (Liquid), Alloying Materials, Fluxes	S011
B001	Riley Boiler No. 1	None	525 MMBtu/hr	Blast Furnace Gas, Coke Oven Gas & Natural Gas	S012
B002	Riley Boiler No. 2	None	525 MMBtu/hr	Blast Furnace Gas, Coke Oven Gas & Natural Gas	S013
B003	Riley Boiler No. 3	None	525 MMBtu/hr	Blast Furnace Gas, Coke Oven Gas & Natural Gas	S014
F001	Blast Furnace Slag Pits	N/A	581,565 TPY	Blast Furnace Slag	N/A

I.D.	SOURCE DESCRIPTION	CONTROL DEVICE(S)	MAXIMUM CAPACITY	FUEL/RAW MATERIAL	STACK I.D.
F002	Plant Roads	Wet Suppression; Chemical Treatment; Paved Road Sweeping	N/A	N/A	N/A
N/A	WSAC (Mold Water) Cooling Tower	N/A	4,100 gpm	NA	NA
N/A	WSAC (Blast Furnace Closed Loop) Cooling Tower	N/A	2,145 gpm	N/A	N/A
N/A	BF Recycling Cooling Tower	Drift Eliminator	15,000 gpm	NA	NA
N/A	Caster Internal Machine Cooling Tower	Drift Eliminator	14,316 gpm	NA	NA
N/A	Degasser Cooling Tower	Drift Eliminator	5,250 gpm	NA	NA
N/A	BOP Hood Cooling Tower	Drift Eliminator	30,000 gpm	NA	NA
N/A	BOP Gas Cleaning Cooling Tower	Drift Eliminator	20,000 gpm	NA	NA
N/A	Caster Spray Water Cooling Tower	Drift Eliminator	7,000 gpm	NA	NA

1. PROCESS DESCRIPTIONS:

The emission sources listed in Table 1 above can be divided into four general categories

- Blast Furnace and Stoves (Iron Making)
- Basic Oxygen Process (Steel Making)
- Ladle Metallurgy Facility (LMF)
- Vacuum Degasser
- Dual Strand Continuous Caster
- Combustion Units (Boilers and Space heaters)
- Circulating Cooling Waters

1.1 Blast Furnace and Stoves (Iron Making)

Molten Iron is manufactured by charging raw materials into blast furnace where they are reacted with hot air to form molten iron, slag, and blast furnace gas (BFG). Blast furnace gases, coke oven gas (COG) and natural gas (NG) are used as fuels at the blast furnaces. The primary pollutant from this operation is particulate matter (PM), Sulfur Oxide (SO_2), carbon monoxide (CO), nitrogen oxides (NO_x) and volatile organic compounds (VOC) from the casthouse and product of combustion from the blast furnace stoves. Other activities conducted at the blast furnaces which result in low or insignificant emissions include raw

materials handling, blast furnace slag handling, blast furnace waste water treatment and recycle systems, and the blast furnace gas flare.

After hot metal from the blast furnace is tapped from the furnace at the casthouse and transferred to the charging aisle, it is desulfurized by adding reagent to the vessel causing sulfur and other impurities to form, solidify and rise to the surface of the vessel to be skimmed. The emission from hot metal transferred and slag skimming operation is PM.

1.2 Basic Oxygen Process (Steel Making)

Hot metal is charged into the basic oxygen process (BOP) steel making vessels after the desulfurization process. The hot metal, along with steel scrap, fluxing agents, and alloying materials are reacted with high priority oxygen which is blown into the vessel vial lances. Once the desired steel metallurgy is obtained, the molten steel is tapped into a ladle for transport to the LMF. The primary pollutant from this steel making operation is PM. Significant emissions occur during charging, oxygen blowing, tapping and slag dumping. Other activities conducted at the BOP Shop which results in low or insignificant emissions including flux materials handling, BOP slag handling, material storage, and wastewater treatment and recycle systems. Additional fuel is used for ladle pre-heaters and space heating

1.3 Ladle Metallurgy Facility (LMF)

Molten Steel is tapped from BOP vessels and transferred to the LMF vessel where the steel is further refined. At the LMF alloying materials are added to the vessel to enhance the metallurgical properties of the heat. Electrodes are submerged in the vessel to maintain molten/liquid steel. The primary pollutant from this LMF operation is PM. The alloy material handling system and the LMF vessel itself are the primary contributors of the PM emissions.

1.4 Vacuum Degasser

A vacuum degasser is used to remove oxygen (as CO), hydrogen, and nitrogen from molten steel in preparation for casting. Alloy materials handling system and CO Flare are integral part of the degasser

1.5 Dual Strand Continuous Caster

The caster receives molten steel from the BOP shop or LMF. Molten steel is poured into the caster mold, which is accompanied by a series of water sprays to produce steel slabs. As the steel slabs are processed, they are cut to length, ground, and slit as appropriate. Minor fugitive emissions are associated with the caster and its related operations. Additional fuel is used at the caster and LMF area tundish pre-heaters, nozzle heaters, driers, and space heating. An oxygen lance is used in the caster area to clean the caster shroud approximately once every heat, resulting in minor fugitive emissions.

1.6 Combustion Units (Boilers and Space Heaters)

There are three (3) Riley Boilers rated at 525 MMBtu/hr each at the facility, which is used to generate steam, heat and electricity for the plant. The three primary fuels for the boilers are BFG, COG and NG. The boilers are also designed to burn No.2 fuel oil during emergency condition. Emissions from the boilers include PM, SO_2, NO_x, CO and VOC.

1.7 Fugitive Emission Sources:

The following sources are considered source of fugitive emissions

a. Blast Furnace Slag Pits

b. Bulk Materials Storage and Handling
c. Plant Paved and Unpaved Roads

2.0 Maximum Potential Emissions

2.1 *Blast Furnace Stack Emissions*

Emissions from the blast furnaces are due to the combustion from the blast furnace and casthouse. Emissions from each of the blast furnaces and stoves shown in the table below.

The blast furnace PM emission is estimated using the formula in Article 21, Section §2104.02.c.9.A

$$A = 0.76E^{+0.42}$$

Where:

A = allowable emissions in pounds per hour, and
E = emission index of (F) x (W) pounds per hour,

F = process factor in pounds per unit as listed below,
W= production or charging rate in units per hour and the units for F and W shall be compatible.

Blast Furnace No. 1 & 3 Casthouse and Blast Furnace No. 1 & 3 Stoves Emissions

Pollutants	Emissions							
	Blast Furnace[3] No. 1		Blast Furnace[3] No. 3		Blast Furnace No. 1 Stove[4]		Blast Furnace No. 3 Stove[4]	
	Lbs/hr	Tons/yr[1]	Lbs/hr	Tons/yr[1]	Lbs/hr	Tons/yr[1]	Lbs/hr	Tons/yr[1]
[2]PM	48.67	213.17	40.0	175.0	24.75	108.41	24.75	108.41
[2]PM_{10}	48.67	213.17	40.0	175.0	24.75	108.41	24.75	108.41
SO_X	30.30	132.71	26.43	115.76	353.03	1,543.26	353.03	1,543.26

[1]A year is defined as any consecutive 12-month period
[2]PM/PM_{10} emissions are from Article XXI section §2104.02.c.9.A
[3]SO_2 emissions based on 35 grains of H2S/100 cf-COG per §2105.21.h.4.
[4]SO_2 emission is based on §2104.03.a.2.B

The NO_x, CO, VOC and HCL emissions from Blast Furnaces 1 & 3 and Stoves are not included in the permit because U.S. Steel needs to conduct emission testing and evaluation to develop emission factors that will be use to estimate the NO_x, CO, VOC and HCL emissions.

Blast Furnace No. 1 & 3 Casthouse and Blast Furnace No. 1 & 3 Stoves Throughput

Sources	Steel Production		COG Throughput		NG Throughput		BFG Throughput	
	tons/hr	Tons/yr	Mmcf/hr	Mmcf/yr	Mmcf/hr	Mmcf/yr	Mmcf/hr	Mmcf/yr
Blast Furnace 1	200	1,752,000	0.322	2,820	0.403	3,530	NA	NA
Blast Furnace 3	125	1,095,000	0.281	2,460	0.338	2,960	NA	NA
BF #1 Stove	NA	NA	0.96	8,399	0.47	4,095	5.5	48,180
BF #3 Stove	NA	NA	0.96	8,399	0.47	4,095	5.5	48,180

Sample Calculation for combustion stack

The blast furnace PM emission is estimated using the formula in Article 21, Section §2104.02.c.9.A

$A = 0.76E^{+0.42}$

Where:

A = allowable emissions in pounds per hour, and
E = emission index of (F) x (W) pounds per hour,

F = process factor in pounds per unit as listed below,
W= production or charging rate in units per hour and the units for F and W shall be compatible.

$A = 0.76\ [(200\ ton/hr)*(100\ lbs/tons)]^{0.42}$

= **48.67 lbs/hr**

= (48.67 lbs/hr)*(8760 hr/yr)*(tons/2000lbs)

= 213.17 tons/yr

2.2 Basic Oxygen Process (Steel Making) Emissions

Basic Oxygen Process (BOP) emissions occur during charging, oxygen blowing, tapping and slag dumping. The total BOP emission is the sum of all emissions from hot metal transfer and desulfurization, slag skim after desulfurization, BOP charging, BOP tapping, BOP slag dumping, BOP flux handling, BOP fuel usage and BOP fugitive. The emissions from the BOP operations are shown in the table below:

Basic Oxygen Process Shop Emissions

Pollutants	Lbs/hr	Tons/yr
[1]PM	44.12	193.24
[1]PM_{10}	44.12	193.24
SO_X	5.06	22.15

PM/PM_{10} emission factors from allowable emissions per §2104.02.c.9.B.

The emission from the BOPF Secondary Emission Control Baghouse from IP-0051-I004a are shown below

F & R Vessel Basic BOPF Secondary Emission

[1] Pollutants	lbs/hr [1]	tons/yr [2]
Particulate Matter	24.90	109.10
PM-10	24.90	109.10
PM-2.5	24.90	109.10

[1]Includes emissions from furnace charging, steel tapping and slag dumping.
[2]A year is defined as any 12 consecutive months

The missions from the BOP Mixer and Desulfurization baghouse (stack S005) are shown in the table below:. (§2104.02.b; §2103.12.a.2.B).

BOP Mixer and Desulfurization**

POLLUTANT	**Hourly Emission Limit (lb/hr)**	**Daily Emission Lbs/day**	**Annual Emission Limit (tons/year)***
Particulate Matter (filterable)*	7.0	100	18.25
PM-10 (filterable)*	7.0	100	18.25

***** A year is defined as any consecutive 12-month period.
******PM/PM_{10} emission based on §2104.02.b

Ladle Metallurgy Facility (LMF) & Dual Strand Continuous Caster Emission

The LMF emissions occur during alloy material handling and from the LMF vessel itself. The LMF emissions are derived through Installation Permit #0051-I005, issued March 13, 2009. The Dual Strand Continuous Caster emissions are derived through Installation Permit No. 7035003-002-93900, issued March 1, 1994.

Ladle Metallurgy Facility (LMF)

Pollutant	lbs/hr	tons/yr [1]
Particulate Matter (filterable)	5.12	22.43
PM-10 (filterable)	5.12	22.43
PM-2.5 (filterable)	5.12	22.43

` [1] A year is defined as any 12 consecutive months.

Dual Strand Continuous Caster Emissions[a]

Pollutants	**Tons/yr[a]**
PM	1.0
PM_{10}	1.0
NO_x	12.0
SO_X	23.0
CO	3.0
VOC	1.0

[a]A year is defined as any consecutive 12-month period

The PM/PM_{10} emission from IP No. 7035003-002-93900 was a total of 16 ton/yr, and one (1) ton/yr applies to the Dual Strand Continuous Caster operation and 15 tons/yr (for 4 modules baghouse) applies to the LMF operation. However, with the new LMF installation permit #0051-I005, the 22.43 tons/yr (for 6 modules baghouse) of PM in the LMF table above superseded the 15 tons/yr from IP No. 7035003-002-93900.

a. <u>Boilers Emissions</u>

Emissions from each of the three (3) boilers firing blast furnace gas are shown below

Pollutants	Lbs/hr	Tons/yr[4]
[1]PM	26.25	114.98
[1]PM_{10}	26.25	114.98
[2]NO_x	NA	800.0
[3]SO_X	371.35	1,626.52

[1]PM emission from allowable emissions per §2104.02.a.3. Assume PM = PM_{10}.
[2]NO_x emission factor from Plan Approval Order and Agreement No. 234 Upon Consent (RACT Plan), 12/30/96
[3]SO_2 emissions from allowable emissions per §2104.03.a.2.B
[4]A year is defined as any consecutive 12-month period.

<u>Sample Calculation</u> (SO_2 for boiler firing blast furnace gas)

The Boiler PM emission is estimated using the formula in Article 21, Section §2104.02.a.3

$A = 1.7E^{-0.14}$

Where A = allowable emissions in lbs/MMBtu of actual heat input
E = actual heat input in MMBtu/hr.

Where:

A = allowable emissions in lbs/MMBtu of actual heat input, and
E = actual heat input in MMBtu/hr.

$A = 1.7[525]^{-0.14}$

= 0.7073 **<u>lbs/MMBtu</u>**

PM (LB/HR) = (0.7073 lbs/MMBtu)*(525 MMBtu/hr)

= 371.35 lbs/hr

(371.35 lbs/hr)*(8760 hr/yr)*(tons/2000lbs)

= <u>1,626.52 tons/yr</u>

b. Blast Furnace Gas Emissions

Blast Furnace Gas Flare Emissions[a]

Pollutants	Lbs/hr	Tons/yr
PM	6.90	26.28
PM_{10}	3.45	13.14
NO_x	22.77	86.72
SO_X	103.50	394.20
CO	127.65	486.18

[a]A year is defined as any consecutive 12-month period

Facility Emissions Summary

Emission Limitations Summary

POLLUTANT	ANNUAL EMISSION LIMIT (tons/year)*
Particulate Matter	**1,325.14**
PM-10	**1,312.0**
$PM_{2.5}$	**1,312.0**
SO_x	**8,651.01**
NOx	**2,508.97**
CO	**491.93**
VOC	**3.0**

***A year is defined as any consecutive 12-month period. This includes the two (2) alternate operating scenarios contained in Sections VI.and the BFG Flare**

3.0 EMISSION SOURCES OF MINOR SIGNIFICANCE:

a) The following sources are insignificant, and there are no applicable requirements for these sources.

1. Air conditioning equipment for human comfort
2. Non-regulated ventilation equipment
3. Electrically heated furnaces, heaters, and ovens
4. On-site food preparation
5. Office equipment and products
6. Janitorial services and products

7. Garbage containers and waste barrels
8. Bathroom/toilet vents
9. Tobacco smoking rooms
10. Repair and maintenance shop activities
11. Hand-held power tools
12. Routine calibration of laboratory or other testing equipment
13. Equipment used for QA/QC or inspection purposes
14. Fire suppression systems, fire training, and accidental open burning
15. Repair and maintenance of cooling and air conditioning equipment
16. Laboratory exhaust hoods and associated activities
17. Collection and ventilation systems required for industrial hygiene purposes

The wastewater treatment process was listed as part of insignificant activities because the wastewater emissions of VOCs are insignificant.

As part of the NPDES permit renewal process, PADEP requires that facilities conduct sampling of the influent water to and the effluent water from a wastewater treatment system in order to verify the treatment efficiency. The testing required covers a wide range of parameters, including volatile and semi-volatile organic compounds. Sampling conducted by U. S. Steel in 2006 verified that the influent and effluent wastewaters did not contain any appreciable amounts of volatile and semi-volatile organics.

In developing the Effluent Limit Guidelines for iron-making and steelmaking wastewater treatment operations, USEPA determined that organics were not present in significant quantities to be detectable, and thus did not establish them as pollutants of concern. USEPA's determination is supported by the NPDES sampling conducted at the Edgar Thomson Plant and further supports the designation of wastewater as an insignificant source of emissions.

Result of the wastewater sampling analysis is provided in Appendix A below.

4.0 EMISSION CONTROL:

a) Blast Furnaces Nos. 1 and 3 share a four-compartment Wheelabrator Frye Baghouse to control casthouse particulate emissions. Each blast furnace has a Double Bell and Hopper system designed to capture and control all blast furnace raw material charging emissions, a Dust Catcher designed to collect particulate matter from blast furnace exhaust gas, and a Venturi Scrubber designed to clean the Dust Catcher exhaust gas. In addition, there is a Blast Furnace Flare common to both blast furnaces that burns excess BFG.

b) The BOP Shop is controlled by: 1) a Merrick 12-compartment BOP Shop Mixer and Desulfurization Baghouse; 2) a Wheelabrator Frye 7-compartment BOP Shop Secondary (fugitive) Baghouse; 3) four Pangborn materials handling Baghouses to control particulate matter emissions from railcar unloading at the flux house, the BOP flux material transfer tower, the BOP flux material internal conveying/transfer No.1, and the BOP flux material internal conveying/transfer No.2; and 4) a BOP gas cleaning Venturi Scrubber.

c) The LMF is controlled by an Amerex four-compartment pulse jet Baghouse. There are also two small baghouses for the LMF tripper car (conveyor system) and for the pneumatic lime bin feeder system which are located and vent inside the LMF building.

d) The Dual Strand Caster Cutting Station uses high pressure oxygen (with natural gas fired pilots) to cut steel slabs to length. Because of the high inherent efficiency of the cutting operation, emissions

have been determined to be negligible from this operation. A high volume water spray trough below the process line collects particulate from the Cutting Station. Caster Shroud Cleaning is performed following approximately every heat. A hood and small industrial hygiene vacuum collects dust from this operation. The dust collector is vented inside the building. A Grinding Facility removes surface defects from slabs. This facility uses a small dust collector to recover revert which is recycled as raw material feed. The dust collector is vented inside the building. During routine Tundish Maintenance, a small, insignificant amount of dust is generated by cleaning tundish parts. A small dust collector is utilized during the maintenance process for industrial hygiene purposes. The dust collector is vented to the atmosphere. Caster mold flux is added to the caster by use of an automatic flux feeder system. A small, insignificant amount of fugitive emissions are created by this operation. The fugitive emissions generated by this operation are vented through a dust collector, which then discharges to the spray chamber inside the caster building.

e) The Vacuum Degasser utilizes a John Zink Flare Stack to control CO emissions.

f) Riley Boilers Nos. 1-3 does not employ any control devices.

Fugitive PM emissions from bulk materials storage and handling are controlled by wet suppression. Fugitive PM emissions from plant paved and unpaved roads are controlled by wet suppression, chemical treatment, and paved road sweeping.

5.0 REGULATORY APPLICABILITY:

1) Allegheny County Health Department Rules and Regulations (Article XXI)

The requirements of Article XXI, Parts B and C for the issuance of major source operating permits have been met for this facility. Article XXI, Part D, Part E & Part H will have the necessary sections addressed individually in the operating permit. Some Article XXI sections are addressed below:

a. ***Article XXI, ACHD Coke Ovens and Coke Oven Gas (§2105.21)***

This source does not contain any coke ovens, but does receive coke oven gas (COG) from the US Steel Plant in Clairton for use as fuel in multiple process and combustion units. As such, this source is subject to the requirements of §2105.21.h.4 for each subject unit that combusts COG, whereby the sulfur compound concentration, measured as H_2S, is limited to no greater than 40 grains per hundred dry standard cubic feet of COG. The source shall measure the concentration of the COG combusted a minimum of once per each successive twenty-four hour time period to demonstrate compliance with this limit. This requirement and corresponding record keeping are incorporated into the permit.

b. ***Article XXI, ACHD Slag Quenching (§2105.20.b)***

The source performs slag quenching operations in association with the blast furnace slag. The permittee has specified that the slag is not granulated. and that they do not use ladles to transfer the slag to the pits; rather, the slag is poured directly into the slag pits using troughs that are located in the floors of the furnace cast houses that run directly to the pits. As such, the requirements of §2105.20.a (granulated slag) and §2105.20.c (hard slag ladle pits) do not apply, but the requirements of §2105.20.b (hard slag facility), which does not reflect only the use of ladles for slag transfer, does apply. Such requirements are incorporated into the major source operating permit for the affected activities.

c. ***§2105.15 (Degreasing Operations)***

Solvent based parts cleaning tanks are used at the plant to clean soiled or greasy machinery parts and components. The source operates machine shop parts cleaners and mobile equipment repair area parts cleaners. The permittee has specified that the facility does not use degreasing fluids that contain VOCs and that each parts cleaner at the plant has opening less than 10 square feet in surface area. Therefore, the requirements of §2105.15 do not apply.

d. ***§2105.48 Miscellaneous Fugitive Sources:***

The requirements of Sections 2105.40, 2105.41, 2105.42, 2105.43, 2105.44, 2105.45, and 2105.47 apply to the source because the source meets the geographic criteria specified in §2105.45.a.1 and a.2. The requirements contain opacity and visibility limits for material transported within the source, parking lot fugitives, construction, demolition and internal traffic. Section 2105.43 prohibits any visible emissions, leaks, spills, or other escape of material during the transport of any solid or liquid material outside the boundary line of the source. The requirements of each rule are incorporated into the permit at the Site Level Terms and Conditions section.

e. ***Permit Section IV – Site Level Requirements:***

The conditions in the site level section of the permit also apply to emission sources in the Emission Unit Section, as appropriate. For example the visible emissions requirements of §2104.01 (Condition IV.1) apply in addition to the visible emissions requirement of 40CFR Part 63 Subpart FFFFF.

f. **Cold Start, §2108.01.d**

Pursuant to the cold start waiver letter dated April 12, 2002, U.S.S-ET has been granted a waiver from the 24-hour reporting for cold starts for the Riley Boilers 1, 2 and 3, and instead, will require semi-annual reports listing the date and time of all cold starts for each boiler.

REGULATED POLLUTANTS WITH NO ESTABLISHED REGULATORY EMISSION LIMITATION:

Section 2103.12.a.2.B of Article XXI requires that RACT be applied to pollutants regulated by Article XXI without established regulatory emission limitations. RACT for PM/PM_{10}, CO, SO2, and VOC emissions from the facility emission units has been determined to be proper operation and maintenance of the equipment according to good engineering and air pollution control practices. Therefore, the emission limitations for these pollutants will be the maximum potential emissions under proper operation of the emission units as shown in the above emission summary.

2) Pennsylvania State Requirements

NOx Budget Trading Program (25 Pa Code Chapter 145 Subchapter A; 40 CFR part 96 subparts BBBB, FFFF, HHHH)

The permittee shall meet the requirements of the PA NOx Budget Trading Program (25 PA Code §145 Subchapter A) for non-EGUs.

The NOx Budget Trading Program has been addressed in Site Level Section of the permit.

3) NESHAP and MACT Standards:

a. ***40 CFR Part 63 Subpart DDDDD: National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters:***

Pursuant to 40 CFR 63.7506(b)(2), the Riley Boilers Nos. 1-3 are not subject to the boiler MACT because they are designated as existing "Large Gaseous Fuel Units", and any boiler under this category are only subject to initial notification requirements in §63.9(b) (i.e., they are not subject to the emission limits, work practice standards, performance testing, monitoring, startup/shutdown/malfunction plan, site-specific monitoring plans, recordkeeping, and reporting requirements of Subpart DDDDD). The permittee shall comply with this requirement by submitting an Initial Notification containing the information specified in 40 CFR §63.9(b) not later than 120 days after November 12, 2004. For these affected sources with an annual capacity factor of greater than 10 percent, the Initial Notification shall include the information required by §63.9(b)(2). (§2104.08, 40 CFR 63.7506(b)(2), 40 CFR 63.7545(b)(1)).

b. ***40 CFR Part 63 Subpart FFFFF: National Emission Standards for Hazardous Air Pollutants for Integrated Iron and Steel:***

The facility is subject to this subpart because it operates a steel plant. This subpart establishes national emission standards for hazardous air pollutants for integrated iron and steel manufacturing facilities. The affected sources at the Edgar Thomson Works are the No. 1 and No. 3 Blast Furnace Casthouses and the BOPF and shop ancillary operations (hot metal transfer, hot metal desulfurization, slag skimming, and ladle metallurgy). The Subpart FFFFF requirements have been added to this permit.

40 CFR 63 Subparts A and FFFFF [§63.7800(b); §63.7831(a) and §63.7810(c)]

a. The permittee shall implement the following plans established in October 19, 2015 or the most recent developed plans:

i. Operation and maintenance plan [40 CFR 63.7800(b)]
ii. Site-specific monitoring plan [63.7831(a)]
iii. Startup, shutdown and malfunction plan [40 CFR 63.7810(c)]

b. The established plan required in condition (a) above shall apply to the following processes

i. #1 and #3 Blast Furnace Emission System
ii. "F" and "R" BOP Furnace Emission System
iii. LMF Emission System
iv. Mixer Emission System

c. ***40 CFR Part 63, Subpart Q: National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers.***

The requirements of this subpart are not applicable to the cooling towers because the cooling towers are not operated with chromium-based water treatment chemicals.

d. ***Risk Management Program (§2104.08, 40 CFR Part 68)***

The facility currently does not store a listed regulated material above the threshold quantities specified by the regulation. Should the facility, as defined in 40 CFR Part 68.3, become subject to Part 68, then

the owner or operator shall submit a risk management plan (RMP) by the date specified in Part 68.10 and shall certify compliance with the requirements of Part 68 as part of the facility's annual compliance certification.

e. **Greenhouse Gas Reporting (40 CFR Part 98):**

The facility is a major source of greenhouse gas (CO_2) emissions. However, the Greenhouse Gas (GHG) reporting rule under 40 CFR Part 98 are not considered applicable requirements under the Title V regulations at this time. Therefore, there are presently no greenhouse gas requirements at the facility.

4) New Source Performance Standards (NSPS)

a) 40 CFR Part 60, Subpart N: (Standards of Performance for Primary Emissions from Basic Oxygen Process Furnaces for Which Construction is Commenced After June 11, 1973)

The requirements of this subpart is not applicable to the operations of the Basic Oxygen Process (BOP) Shop because the BOP shop was constructed prior to the construction commencement applicability dates in the regulations, and there have been no modification or reconstruction approvals issued to the sources for these units.

b) 40 CFR Part 60, Subpart Na: Standards of Performance for Secondary Emissions from Basic Oxygen Process Steelmaking Facilities for Which Construction is Commenced After January 20, 1983

The requirements of this subpart is not applicable to the operations of the Basic Oxygen Process (BOP) Shop because the BOP shop was constructed prior to the construction commencement applicability dates in the regulations, and there have been no modification or reconstruction approvals issued to the sources for these units.

c) 40 CFR Part 60, Subpart D: Standards of Performance for Fossil-Fuel-Fired Steam generators for Which Construction is Commenced After August 17, 1971

The requirements of this subpart is not applicable to the Riley Boilers Nos. 1-3 because these units were installed in 1943, prior to the construction commencement applicability dates in the regulations, and there have been no modification or reconstruction approvals issued to the source for these units.

d) 40 CFR Part 60, Subpart K: Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978.

The requirements of this subpart are not applicable to the storage tanks because these vessels do not meet the 40,000 gallons tank capacity criteria specified in the regulations.

e) *40 CFR Part 60, Subpart Ka: Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984.*

The requirements of this subpart are not applicable to the storage tanks because these vessels do not meet the 40,000 gallons tank capacity criteria specified in the regulations.

f) 40 CFR Part 60, Subpart Kb: Standards of Performance for Volatile Organic Liquid Storage Vessels Including Petroleum Liquid Storage Vessels.

The requirements of this subpart are not applicable to the storage tanks because these vessels do not meet the 75 cubic meter (19,812.90 gallons) tank capacity criteria specified in the regulations.

5) **Compliance Assurance Monitoring (40 CFR PART 64):**

Blast Furnace No. 1, Blast Furnace No. 3, and BOP Shop have potential emissions greater 100 tons per year and uses control device to control the emissions. However, the emission units are not subject to the Compliance Assurance Monitoring (CAM) requirements pursuant to 40 CFR 64.2(b)(i) which says that facility that subject to "*emission limitations or standards proposed by the Administrator after November 15, 1990 pursuant to section 111 or 112 of the Act".* The facility (Blast Furnace 1 & 3 and BOP Shop) is already subject to the 40 CFR Part 63 Subpart FFFFF--National Emission Standards for Hazardous Air Pollutants for Integrated Iron and Steel promulgated on April 22, 2004. No other emission units utilize a control device for any other pollutants whose emissions exceed 100% of the amount (in tons per year) required for classification as a major source.

6) Enforcement Orders and Consent Decrees and Agreements

a) Reasonable Available Control Technology (RACT)- Enforcement Order and Agreement No. 235:

The facility is major for Nitrogen Oxide (NO_x) and therefore subject to Reasonable Available Control Technology (RACT). Section 2105.06 of Article XXI requires that RACT be applied to all major sources of NO_X and VOC. Plan Approval Order and Agreement Upon Consent Number 235, dated December 30, 1996, submitted to the US EPA as a site specific SIP revision to Allegheny County's portion of the PA SIP, has established the following NO_X and VOC RACT requirements:

1. The permittee shall at no time operate the following equipment unless it is being properly operated and maintained in accordance with good engineering and air pollution control practices, with the exception of actions to mitigate emergency conditions:

   a) Boilers 1 through 3
   b) Blast Furnace Stoves and Casthouses No. 1 and No. 3
   c) Dual Strand Continuous Caster
   d) Basic Oxygen Furnace Vessels No. 1 and No. 2
   e) Blast Furnace Gas Flare
   f) Hot Metal Transfer and Desulfurization Unit
   g) Blast Furnace Ramming Mix Operations

2. At no time shall Boilers 1-3 exceed the following limits for NO_x emissions, with the exception of actions to mitigate emergency situations:

Boiler	lb/MMBtu	TPY
1	0.55	800
2	0.55	800
3	0.55	800

3. The facility shall not exceed, at any time, with the exception of actions to mitigate emergency conditions, the following natural gas capacity factors for Boilers 1-3:

Boiler	Capacity Factor
1	78.4%
2	78.4%
3	78.4%

4. Boilers 1-3 shall have properly maintained and operated Continuous Monitoring Systems (CEM) or approved alternatives, meeting all requirements of Section 2108.03 of Article XX at all times with the exception of emergency or planned outages, repairs, or maintenance.

5. The NO_x emission limitations for Boilers 1-3 shall be determined by a thirty day rolling average and by a twelve month rolling average of CEM data for the lbs/MMBtu and TPY emission limitations, respectively.

6. The permittee shall at all times maintain all appropriate records to provide sufficient data and calculations to clearly demonstrate compliance with Section 2105.06 of Article XXI and the RACT Order.

7. The permittee shall make all of the above records available to the Department upon request.

The facility's RACT was re-evaluated in July 17, 2006, and the following conclusions were made:

NOx RACT

1) **Blast Furnace No. 1 and No. 3 Casthouses:** Emissions from the casting of hot metal are controlled by a baghouse that evacuates emissions at the tap hole and to some extent from the iron runners. The iron runners are covered and ignited coke oven gas is applied to areas that are not covered to suppress the generation of iron oxide fumes. According to the 2005 emission inventory, NO_X emissions from both casthouses, including the NO_X generated by the COG fume suppression system, were less than 9 tons/year and potential emissions are less than 11 tons/year. There are no practical methods to control NO_X and VOC emissions from the casthouses and uncontrolled NO_X emissions from the casthouses are minimal. Therefore, RACT for the Blast Furnace No. 1 and No. 3 casthouses is proper maintenance and operation according to good engineering and air pollution control practices at all times.

2) **Blast Furnaces No. 1 and No. 3 Stoves**

The Re-Evaluation of RACT study identified the following controls as potentially technically feasible for the blast furnace stoves:

- Low-NOx Burners (LNBs), and
- Ultra-Low NOx Burners (UNLBs)

The primary fuel used for the blast furnace stoves is blast furnace gas. Potential NO_X emissions for each set of stoves is approximately 28 tons/year and actual emissions for 2005 were approximately 17 tons/year. Combusting blast furnace gas in these stoves results in relatively low NO_X emissions (approximately 0.013 lb-NO_X/MMBtu based on stack testing performed in 1993). LNBs and UNLBs are not a technically feasible retrofit technology for this application because these burners have not been applied to equipment that combusts blast furnace gas. Therefore, RACT for the Blast Furnace No. 1 and No. 3 stoves is proper maintenance and operation according to good engineering and air pollution control practices at all times.

3) **Basic Oxygen Process (BOP) Furnace**

The following control technologies were identified in the July 17, 2006 Re-Evaluation of RACT as potentially feasible for the control of NOx emissions from the BOP scrubber stack:

- SNCR
- SCR

These control methods have not been applied to emissions of NOx from a BOP scrubber stack and conditioning the low temperature (approximately 120^{o}F) saturated exhaust gas prior to treatment in an SCR or SNCR system would be energy intensive and not cost effective. The cost analysis indicates that the cost efficiency for an SCR system is $182,654 per ton of NOx removed. Therefore, RACT for the BOP furnace is proper maintenance and operation according to good engineering and air pollution control practices at all times.

4) **Boilers No. 1, 2 & 3**

RACT Order 235 limits each of the three boilers to a short term NOx emission rate of 0.55 lbs/MMBtu. Stack testing indicates that these boilers are achieving NOx levels significantly less than this limit. The primary fuel for these boilers is blast furnace gas and combusting this fuel results in very low NOx emissions. Potential NOx emission for each of these boilers is 800 tons/year; however, actual 2005 emissions were less than 50 tons/year for each boiler. LNBs or ULNBs are not available for boilers combusting blast furnace gas and SCR and SNCR systems have not been applied to boilers that combust primarily blast furnace gas. Therefore, RACT for these boilers continues to be proper maintenance and operation according to good engineering and air pollution control practices at all times and the short term and annual NOx emission limitations of 0.55 lbs/MMBtu and 800 tons per year, respectively.

VOC RACT ANALYSIS

1) **Blast Furnace No. 1 and No. 3 Casthouses**

The VOC concentration in the casthouse baghouse exhaust is quite low and is not amenable to any cost effective control technology that would reduce VOC emissions. Therefore, RACT for the blast furnace casthouses is proper maintenance and operation according to good engineering and air pollution control practices at all times.

2) **Blast Furnaces No. 1 and No. 3 Stoves**

Potential VOC emissions from the blast furnace stoves are 2.1 tons/year for each blast furnace. Based on these annual emission rates, VOC control for the blast furnace stoves are not practical and cost-prohibitive. Therefore, RACT for the blast furnace stoves is proper maintenance and operation according to good engineering and air pollution control practices at all times.

3) **Basic Oxygen Process (BOP) Furnace**

Potential VOC emissions from the BOP shop are approximately 25 tons/year. The concentration of VOCs in the scrubber exhaust are approximately 100 ppb according to the July 17, 2006 Re-Evaluation of RACT submitted by U.S. Steel. Fugitive VOC emissions released through the BOP building and VOC emissions exhausted through the secondary emission control system baghouse are also quite low. According to the cost analyses conducted in the July 17, 2006 report, control of VOC emissions from these sources is not

cost effective. Therefore, RACT for the BOP shop is proper maintenance and operation according to good engineering and air pollution control practices at all times.

4) **Riley Boilers No.1, 2 and 3**

VOC controls were reviewed in the previous RACT analysis and the cost effectiveness was more than $100,000 per ton of VOC reduction. This previous RACT analysis and the July 17, 2006 Re-Evaluation of RACT concluded that good combustion practices will minimize VOC and these practices constitute RACT for boilers 1, 2 and 3.

b) Second Consent Decree (Civil Action Nos. 79-709 and 91-329) and Subsequent Order (Civil Action No. 99-1783)

The Second Consent Decree outlined a compliance program for the Edgar Thomson Works Blast Furnace No. 3 and BOP Shop, shutdown provisions for certain equipment at the plant, and a road dust control program. Portions of this Consent Decree, namely Section VI.B (Compliance Program – Edgar Thomson Works BOP Shop), Appendix 5 (Edgar Thomson BOP Shop Operating and Maintenance Practices), and Appendix 6 (Road Dust Control Program), were later terminated by an order (Civil Action No. 99-1783) issued on March 3, 2000. This order required a number of compliance requirements for the BOP Shop, including new equipment installations and an ACHD Opacity Regulation compliance demonstration (EPA Method 9 observations) at the BOP Shop Roof Monitor and Primary Emission Control System Scrubber Stacks. The March, 2000 order (Civil Action No. 99-1783) also required recordkeeping and reporting, as well as the implementation of five (5) Supplemental Environmental Projects:

1. Continuous Caster Flux Baghouse,
2. BOP Shop Gas Suppression System,
3. Roadway Paving and Scrap Storage Area Upgrade,
4. BOP Shop Gas Cleaning Equipment Upgrades (Venturi Scrubbers), and
5. PCB Transformer Replacement. These actions were undertaken by the facility as required.

The remaining requirements of the Second Consent Decree that were not terminated by Action No. 99-1783 are incorporated into this major source operating permit, as summarized below.

The Blast Furnace No. 3 equipment requirements, as listed in the Second Consent Decree, include the following:

1. A local hood that extends over a portion of the iron trough to cover, at a minimum, the entire maximum trajectory of hot metal into the trough (this local hood is to be located below the bustle pipe and is evacuated both in front of and behind the bustle pipe at a normal flow rate of 140,000 acfm; the collected particulate emissions are to be exhausted to the Blast Furnace Baghouse);
2. An air "curtain" designed to direct emissions toward the local hood and operate whenever hot metal or slag is flowing from the taphole (the curtain is to consist of 18 air jets positioned on a stationary, inverted U-shaped pipe);
3. Gas lances located at each iron spout to direct gas into the iron ladle;
4. Gas lances located at the iron diverters to suppress emissions escaping from this open area of the runner system; and
5. A cumulative meter to monitor the amount of gas used per cast.

The Blast Furnace No. 3 operating and maintenance requirements, to be employed for each cast (with the exception of unusual or abnormal operating conditions), as listed in the Second Consent Decree, include the following:

1. Trough area:

   a. The trough hood shall be evacuated during every cast. At all times when the trough is drained after a cast, the hood shall be evacuated during the times that hot metal is being blown out of the trough.
   b. The air curtain shall be operated during all casts.

2. Iron Ladle Area and Diverter Area:

   a. Gas shall be used at all iron ladles just prior to and during the filling of every ladle at every cast.
   b. Gas shall be used at the iron diverter at all times when hot metal is flowing through the diverter.
   c. Gas usage meters shall be operable at all times and the consumption of gas shall be recorded daily. The meters will record only the gas consumed to suppress emissions during casting.

3. The permittee may experiment with existing techniques or any future development techniques for emission suppression provided that the compliance is maintained and only after prior notice has been given to the Department. The initial notice may be verbal, but must be confirmed in writing and should include the duration of the experimentation period.

7) Installation Permits:

a) ***ACHD Installation Permit No. 84-I-0008-P, Issued March 20, 1984*:**

This permit, which allowed for the reactivation of the No. 1 Blast Furnace, requires that casthouse emission control be achieved by utilizing a hood above the main iron trough which is connected to a 140,000 SCFM baghouse, by covering the runners, and by utilizing fume suppression techniques. The permit was issued subject to the condition that there be continued use of the venturi scrubber on the furnace offgas and that the facility demonstrate compliance with ACHD visible emission limitations, as well as applicable requirements of the then-existing Consent Decree.

b) ***ACHD Installation Permit No. 87-I-0021-P, Issued August 5, 1987*:**

This permit, which allowed for the reactivation of the No. 3 Blast Furnace, required that the facility comply with Appendix 7 of the then-existing Amended Mon Valley Consent Decree. The requirements for Blast Furnace No. 3 listed in Appendix 7 are consistent with the requirements specified in the Second Consent Decree, summarized earlier.

c) ***ACHD Installation Permit 93-I-0039-P, Issued August 18, 1993*:**

The operation of the Waste Product Recycling and Briquetting Process at the plant, which is an Alternative Operating Scenario, is subject to the following conditions:

1. Emissions from the installation shall not exceed, at any time, the following limits, based on 5,000 hours of operation per year:

Pollutant	lbs/hr	TPY
PM/PM_{10}	1.3	3.25
SO_2	5.3	13.25
CO	1.1	2.75
NO_x	4.1	10.25
VOC	0.8	2.00

2. If the Bureau determines that material handling operations require hooding and dust controls, such items shall be installed promptly by the company.

d) ***ACHD Installation Permit No. 94-I0006-P, Issued October 20, 1995:***

This installation permit for the Vacuum Degasser requires that:

1. The degasser shall not be operated without a properly operating flare on the exhaust.
2. Emissions of Carbon Monoxide (CO) to the atmosphere are limited to 4.3 lbs/hr and 17.1 TPY.

e) ***ACHD Installation Permit No. 0051-I004 and 0051-I004a, Issued August 31, 2006***

This installation permit was initially issued in August 31, 2006 and modified in January 1, 2007. It was for the F & R Vessel Basic Oxygen Process Furnace (BOPF) Secondary Emission. The modification (IP-0051-I004a) was to revised PM-10 emission rate from 11.2 lb/hr and 49.1 tons/yr to 24.9 lb/hr and 109.1 tons/yr; PM-2.5 emission rate revised from 5.5 lb/hr and 24.0 tons/yr to 24.9 lb/hr and 109.1 tons/yr. Condition V.A.3.a: "3-month" changed to "6-month." The emission summary section VII for PM10 and PM2/5 were changed from 49.1 and 24.0 tons/yr to 109.1 tons/yr.

f) ***ACHD Installation Permits No. 0051-I005, Issued March 13, 2009:***

This installation permit is for the modification of the LMF Baghouse and Flux/Alloy Handling System, and it includes the following:

- Increase the capacity of the existing baghouse from approximately 93,000 acfm to 120,000 acfm by adding two new baghouse modules (four existing modules plus two new modules for a total of six modules after modification). The air flow to each module after the upgrade will drop from approximately 23,333 acfm per compartment to 20,000 acfm per compartment, which will reduce the A/C ratio from 5.53:1 to 4.71:1.

- Most of the ductwork will be increased to a 52 inch diameter from the current 42 inch diameter. Additionally, the spark box will be modified for the increased volume and components will be added for more effective cooling and dust drop out. The booster fan for the additive system will be eliminated and the additive system ductwork will be rerouted to by-pass the spark box as no sparks are generated by its operation. Thus, the spark box will only serve the direct evacuation of the LMF hood. To accommodate the additional 2 modules the baghouse inlet plenum will be modified or replaced.

- The 4 existing belt driven fans will be replaced with direct drive motors of an identical horse power. The 2 new fans will also have direct drive motors and will have the same horse power as the existing motors.

- The upgraded baghouse will comply with all applicable requirements of 40 CFR 63 Subpart FFFFF (National Emission Standards for Hazardous Air Pollutants: Integrated Iron and Steel Manufacturing).

The installation permit conditions have be incorporated into the Title V Operating Permit under the LMF source.

g) ***ACHD Installation Permits 94-I-0026-P and 94-I-0027-P:***

These installation permits were for the construction of new blast furnace slag pits designed to allow slag from Blast Furnaces Nos. 1 and 3 to be run directly into the respective slag pits. This replaced the old slag pit arrangement whereby the slag was loaded into slag pots and transferred by train to remote pits. These permits require the following:

1. Emissions from the slag pits comply with all applicable emission standards of Articles XX and XXI;
2. Pouring practices shall be as outlined in a September 6, 1994 letter; and
3. The existing slag pits be deactivated upon activation of the new pits.

8) Operating Permits:

a) ***ACHD Operating Permit No. 7035003-004-90105, Issued July 7, 1986:***

This operating permit specifies the following equipment requirements for Blast Furnace No. 1:

1. A local hood designed to evacuate the iron notch and trough area;
2. An air "curtain" designed to direct emissions toward the local hood and operate whenever hot metal or slag is flowing from the taphole;
3. Iron runner covers which cover the iron runner system whenever iron flows from the taphole, but allow openings for iron gates;
4. Moveable steam or gas lances, one located at each iron spout to direct steam or gas into the iron ladle;
5. Gas lances, one located at each iron and slag gate to suppress emissions escaping from these open areas of the runner system; and
6. Two cumulative meters, one to monitor the amount of steam used per cast and the other to monitor the amount of natural gas used per cast.

This permit requires the following operation and maintenance procedures:

1. The trough hood shall be evacuated during every cast. At all times when the trough is drained after a cast, the hood shall be evacuated during the times that hot metal is being blown out of the trough.
2. The air curtain shall be operated during all casts.
3. All runner covers shall be in place on active runners at all times during each cast.
4. A complete set of spare runner covers shall be kept available for use at the casthouse.
5. Runner bed materials shall be selected to minimize emissions.
6. Steam or gas shall be used at all slag and iron ladles just prior to and during the filling of every ladle at every cast.
7. Steam and gas usage meters at the iron and slag ladle area shall be operable at all times and the consumption of steam and/or gas shall be recorded daily. The meters will record only the gas and/or steam consumed to suppress emissions during casting.
8. Gas lances shall be used just prior to and during the flow of hot metal or slag through each gate, to suppress emissions generated from these open areas.
9. Gas usage meters at the iron and slag gates shall be operable at all times and consumption of gas used during casting shall be recorded daily.

b) ***ACHD Operating Permit No. 7035003-002-93800, Issued January 10, 1991:***

This permit requires that the BOP Shop be properly maintained and operated in accordance with the following:

1. Emissions from the hot metal mixer, direct pour station, charging ladle and metal desulfurization station shall be captured by movable hood car and mixer fixed hood and directed to the BOP Mixer & Desulfurization Baghouse;
2. Emissions from hot metal slag skimming and BOP Vessel F and R charging, tapping and slag dumping shall be collected by the charging aisle and furnace aisle roof canopies and directed to the BOP Secondary Baghouse;
3. Emissions from flux railcar unloading, BOP flux material transfer tower, BOP flux material internal conveying/transfer No.1, and BOP flux material internal conveying/transfer No.2 shall be collected and directed to a respective dedicated baghouse;
4. Emissions from oxygen blowing at BOP Vessels F and R shall be captured by a water cooled hood above each Vessel and directed to the BOP Shop Gas Cleaning Venturi Scrubber.

In addition, the permittee shall maintain and operate the BOP Shop baghouses in accordance with the following at all times the subject processes are operating and producing particulate emissions:

1. The particulate control efficiency of each baghouse shall be a minimum of 99 percent;
2. The differential pressure drop across each baghouse compartment of the BOP Mixer & Desulfurization Baghouse and the Secondary Baghouse shall be between 5" and 15" w.c. and 5" and 14" w.c., respectively, measured to the nearest ½" w.c.
3. The differential pressure drop across each compartment of the four (4) flux materials handling baghouses shall be between 5" and 14" w.c., measured to the nearest ½" w.c.
4. The outlet grain loading from the BOP Mixer & Desulfurization Baghouse shall not exceed at any time 0.01 grains per dry standard cubic foot of exhaust air.
5. The outlet grain loading from the BOP Secondary Baghouse shall not exceed at any time 0.0011 grains per dry standard cubic foot of exhaust air for 7 compartments and 0.00798 grains per dry standard cubic foot of exhaust air for 7 compartments.
6. The outlet grain loading from each of the four materials handling baghouses (BH1 - BH4) shall not exceed at any time 0.01 grains per dry standard cubic foot of exhaust air.

The permittee shall maintain and operate the BOP Shop Venturi Scrubber in accordance with the following at all times of Vessel F and R oxygen blowing:

1. The scrubber shall have a minimum scrubbing liquid flow rate of 3,700 gpm;
2. The scrubber shall operate at an average pressure drop of 70" w.c.; and
3. The scrubber shall operate at a design total particulate control efficiency of 99.5 percent.

c) ***ACHD Operating Permit No. 7035003-002-90107, Issued February 18, 1993:***

This operating permit limits the particulate matter emissions from the No. 3 Blast Furnace to 40 lbs/hr and 175 TPY. The permit also called for the following emission control technology to control particulate emissions from the iron trough, the iron runners, the iron spouts, and the iron ladles:

1. A local hood that extends over a portion of the iron trough to cover, at a minimum, the entire maximum trajectory of hot metal into the trough. This local hood is to be located below the bustle pipe and is evacuated both in front of and behind the bustle pipe at a normal flow rate of 140,000 acfm. The collected particulate emissions are to be exhausted to a baghouse.

2. An air "curtain" designed to direct emissions toward the local hood and operate whenever hot metal or slag is flowing from the taphole. The curtain is to consist of 18 air jets positioned on a stationary, inverted U-shaped pipe.
3. Iron runner covers which cover the iron runner system whenever iron flows from the taphole, but allow openings for iron gates.
4. Slag runner covers which cover the slag runner system whenever slag is flowing in the runners, but allow openings for slag gates.
5. Gas lances located at each iron spout to direct gas into the iron ladle.
6. Gas lances located at the iron diverters (or iron gates/dam) to suppress emissions escaping from this open area of the runner system.
7. A cumulative meter to monitor the amount of gas used per cast.
8. Installed instrumentation and computer monitoring equipment.

The following operation and maintenance procedures are required:

1. The trough hood shall be evacuated during every cast. At all times when the trough is drained after a cast, the hood shall be evacuated during the times that hot metal is being blown out of the trough.
2. The air curtain shall be operated during all casts.
3. All runner covers shall be in place on active runners at all times during each cast.
4. A complete set of spare runner covers shall be kept available for use at the casthouse.
5. Runner bed materials shall be selected to minimize emissions.
6. Gas flames shall be used at all iron ladles prior to and during the filling of every ladle at every cast.
7. Gas flames shall be used at the iron diverter at all times when hot metal is flowing through the diverter.
8. Gas usage meters at the iron ladle area and diverter area shall be operable at all times and the consumption of gas shall be recorded daily. The meters will record only the gas consumed to suppress emissions during casting.
9. All ladles shall be maintained so as to minimize emissions.

d) ***ACHD Operating Permit 7035003-002-93900, Issued March 1, 1994:***

The operation of the Ladle Metallurgy Facility (LMF) and the Dual Strand Caster is subject to the following:

1. The permittee shall at no time conduct LMF process operations while generating particulate emissions unless the LMF Baghouse is properly maintained and operated.

2. The particulate control efficiency of the baghouse shall be a minimum of 99 percent.

3. The differential pressure drop across each baghouse compartment shall be between 4" and 13" w.c., inclusive, measured to the nearest ½" w.c.

4. Instrumentation shall be available to measure baghouse pressure drop to within ½" w.c. of the actual pressure drop at all times.

5. The outlet grain loading from the LMF Baghouse shall not exceed at any time 0.0052 grains per dry standard cubic foot of exhaust air.

6. The LMF Flux/Alloy Handling System and the LMF shall not be operated, nor allow to be operated, in such manner that visible emissions from any related air pollution control equipment, excluding uncombined water, equal or exceed an opacity of 15% at any time.

7. The LMF Flux/Alloy Handling System, the LMF, the Continuous Caster Shop, and all related operations, activities, and facilities including all equipment preparation and repair shops, shall not

be operated, nor allowed to be operated, in such manner that visible fugitive emissions from any of these operations or activities, excluding uncombined water: a) Equal or exceed an opacity of 15% for a period or periods aggregating more than two and one half (2.5) minutes in any sixty (60) minute period; or b) equal or exceed an opacity of 45% at any time.

8. All emissions from the transfer of lime materials from transport vehicles to the LMF Flux/Alloy Handling System shall be collected and exhausted to the LMF Baghouse.

9. The automatic fume damper on the LMF emission control system shall maintain a negative pressure within the collection hood at all times so as to minimize any emissions that may escape the control system. Pressure measurements shall be recorded and retained for a period of two years and shall be made available upon request by the Department for inspection and copying.
10. The power input to the electrodes shall be automatically reduced upon the opening of the emergency bleeder valve as necessary to minimize the emissions which escape the hood.

11. No processing activities other than slag raking and argon bubbling related to slag raking shall be conducted at the LMF slag raking station located in the tapping aisle of the basic oxygen process (BOP) Shop. Other processing activities shall not be conducted at this station unless approved by the Department in a permit that specifically allows such additional processing activities following a demonstration, in a manner approved by the Department in advance that such activities do not cause or contribute to any violations of the applicable emissions standards.

12. No wire feeding shall be made at the LMF station at any time when power is being supplied to the electrodes.

*e) **ACHD Operating Permit 7035003-002-90105, Issued May 13, 1994:***

This permit amends Permit 7035003-004-90105, issued on July 7, 1986, to allow for the use of coke oven gas as a substitute to natural gas fuel injected into the BF#1 tuyeres.

*f) **ACHD Operating Permit 7035003-002-32300, Issued October 6, 1994:***

The operation of BOP Slag Processing at the plant, which is an Alternative Operating Scenario, is subject to the following conditions:

1. The emissions of PM_{10} from all operations shall not exceed 1.7 TPY.
2. Adequate water must be applied on all slag processing equipment as necessary to prevent the generation of any visible emissions from the building equal to or greater than 20% opacity.
3. An EPA approved chemical dust suppressant shall be applied on all unpaved roads utilized by Langenfelder for ingress and egress once a month, or more often if necessary. The dust suppressant shall be used from April through October.
4. Water shall be applied to all roads and unpaved areas as necessary to prevent generation of any emissions equal to or greater than 20% opacity beyond the plant property line.
5. Openings in the former mold conditioning building will be sheeted to prevent the escape of emissions of 20% opacity or greater with the exception of the North side, entrance, and exit of the Processing Building.

9) METHODS OF DEMONSTRATING COMPLIANCE

Various methods are used to demonstrate compliance with ACHD and federal regulations. These methods are summarized below:

a) *Monitoring Requirements*

1. Blast Furnaces, Basic Oxygen Process Shop (BOP), LMF Baghouses and Dual Strand Caster Dust Collectors

The permittee shall conduct an inspection once per week, check and record the fan motor amperes and damper positions for the emission control systems on a once-per-shift basis.
The permittee shall, at all times, have instrumentation to continuously monitor the differential pressure drop across each compartment of the Blast Furnace, BOP Shop, and LMF baghouses during process operations. Such instrumentation shall measure the pressure drop to within ½" w.c. and be properly operated, calibrated, and maintained according to manufacturer's specifications. The permittee shall also inspect the BOP Shop Venturi Scrubber on a daily basis and check and record the exhaust fan motor amperes and scrubbing liquid flow rates for the Venturi Scrubber once per shift per day. The Hydrogen Sulfide (H_2S) content of the Coke Oven Gas (COG) combusted at the plant shall be measured at least once per hour and the monthly average H_2S content recorded.

In Addition, bag leak detector will be use to demonstrate compliance with the VE requirements for the LMF baghouse and Mixer baghouse.

2. Blast Furnaces Baghouse; BOP Shop Baghouse and Venturi Scrubber Stack; LMF Baghouse Stack; Dual Strand Caster Tundish Baghouse; the Vacuum Degasser CO Flare and the Boiler stacks:

Notations of visible emissions from the Blast Furnace Baghouse stack; BOP Shop Baghouse and Venturi Scrubber stacks; LMF Baghouse stack; Dual Strand Caster Tundish Baghouse; the Vacuum Degasser CO Flare, and the Boiler stacks shall be made on a periodic basis, using EPA Method 9 of Appendix A of 40 CFR Part 60, or other methods approved by the Department. Visible emission notations shall also be made during normal daylight operations of other plant activities, such as BOP Slag Processing, Waste Product Recycling and Briquetting, and plant roads, which generate fugitive PM emissions. A trained individual shall record whether any emissions are observed and whether these emissions extend beyond the facility property line.

The permittee shall install, calibrate, maintain, and operate a CEM for each of the Riley Boilers Nos. 1-3 and record the output of the system, for measuring nitrogen oxide emissions discharged to the atmosphere. The CEM data recorder shall convert the data to the required reporting units in compliance with 25 PA Code §§139.101-139.111 relating to requirements for continuous in-stack monitoring for stationary sources (§2108.03.b.2, RACT Order No. 235, Condition 1.4)

b) ***Record Keeping Requirements***

Data and information required to determine compliance with the requirements of this permit include:

1. Production and material throughput data for each process unit (daily, monthly, and 12-month);
2. The PM/PM-10 emission rates determined from biennial source testing at the Blast Furnace Baghouse, Blast Furnace Stoves, BOP Shop Mixer and Desulfurization Baghouse and Secondary Baghouse, and BOP Shop Venturi Scrubber;
3. Continuous measurements of the differential pressure drops across each compartment of the above baghouses;
4. Measurements of the BOP Shop Venturi Scrubber exhaust fan motor amperes and scrubbing liquid flow rates;
5. Daily recordings of the amount of gas used by the gas lances at the iron ladle area and diverter area;

6. The total amount of fuel used at the Blast Furnaces and Stoves, BOP Shop, LMF, Dual Strand Caster, Vacuum Degasser, Waste Product Recycling and Briquetting process, and each of the Boilers, recorded on a monthly basis for each fuel type;
7. The hourly and monthly average H_2S content of the COG used at the plant;
8. Stack test protocols and reports;
9. Visible emission notations for all process and combustion equipment;
10. Records of boiler cold starts (date, time and duration of each occurrence);
11. Boiler operating hours (hours/day, monthly, and 12-month);
12. NO_x continuous emissions data for each boiler;
13. Records of operation, maintenance, inspection, calibration and/or replacement of combustion equipment;
14. Records of the date, time, locations, amount of undiluted chemical dust suppressant, and the dilution ratio of each application of chemical dust suppressant to plant roads and other areas; and
15. Daily records of the odometer readings of trucks used to apply chemical dust suppressant and of the engine clock (i.e., run time), odometer readings, and locations swept by the plant road vacuum sweepers.

The permittee shall maintain records of control system inspections and performance evaluations and all records of calibration checks, adjustments, and maintenance performed on all equipment that is subject to this permit. (§2103.12.j)

The permittee shall record all instances of non-compliance with the conditions of this permit upon occurrence along with corrective action taken to restore compliance. (§2103.12.h.1) All records shall be retained by the facility for at least five (5) years. These records shall be made available to the Department upon request for inspection and/or copying. (§2103.12.j.2)

c) ***Reporting Requirements***

The permittee shall report the following information semiannually to the Department:

1. Outages and repairs of air pollution control equipment;
2. Total monthly fuel use, per fuel type, for each process unit and boiler;
3. The monthly average H_2S content of the COG fired;
4. Biennial source testing results (to be reported every two years under separate cover);
5. Boiler cold start information (date, time, and duration of each occurrence);
6. Results of visible emission notations;
7. Identification of any maintenance, repairs, patching, or repaving of paved roads or areas;
8. The dates on which chemical dust suppressant was applied to plant roads and other areas, as well as the locations, amounts, and dilution ratios of the applications; and
9. Any non-compliance information.

d) **Testing Requirements**:

Article XXI §2103.12.h.1 and §2108.02

The permittee shall perform emission tests for PM/PM_{10} concentrations (gr/dscf) and equivalent emission rates (lb/hr) and plume opacity at the following:

a. The Blast Furnace Nos. 1 and 3 Casthouse Baghouse;
b. The Blast Furnace Nos. 1 and 3
c. Th**e** BOP Shop Mixer and Desulfurization Baghouse;
d. The BOP Shop Secondary Baghouse;
e. The BOP Shop Venturi Scrubber; and

f. The LMF Baghouse to demonstrate compliance with the Blast Furnace, BOP Shop, and LMF emission limitations of this permit. The permittee shall conduct visible emissions testing of plume opacity at the Continuous Caster Shop and the Vacuum Degasser Smokeless CO Flare.

The permittee shall perform sulfur oxides and nitrogen oxides emissions testing on the Riley Boilers Nos. 1-3 under normal (i.e., mixed fuel) operating conditions in order to demonstrate compliance with the boiler SO_2 and NO_x limitations of this permit. During this testing, the permittee shall compute the F-factor for BFG.

The permittee shall perform emissions tests and evaluations to develop emission factors that can be applied to quantify emissions on the following sources:

a. Blast Furnaces 1 & 3 – (NO_x, SO_x, CO, VOC & HCL)
b. Blast Furnace No. 1 Stoves and Blast Furnace No. 3 Stoves – (NO_x, CO, VOC & HCL)
c. Basic Oxygen Process (BOP) Shop (NO_x, SO_x, CO and VOC)
d. Riley Boilers Nos. 1-3 - (CO, VOC and HCL)

All testing shall be conducted in accordance with applicable U.S. EPA approved test methods, Article XXI §2108.02, and as approved by the Department. The appropriate test methods are specified in the permit. (§2103.12.h.1; §2108.02.b, §2108.02.e)

All testing shall be repeated at least once every two years from the date of the prior valid test.

10) RECOMMENDATIONS:

All applicable Federal, State and County regulations have been addressed in the permit. The Title V operating permit should be approved with the emission limitations, terms and conditions in the Title Operating Permit No. 0051.

APPENDIX A
Emission Unit Data

Emission Unit Data

Unit:	**Blast Furnace No. 1 & Casthouse**
Max. Capacity:	1,752,000 TPY
Date installed:	Unknown
Fuel/Raw Material:	Coke, Iron-Bearing Materials, Fluxes
Exhaust	Stack S002 (Blast Furnace Baghouse); 284,000 SCFM
Emission controls:	Blast Furnace Nos. 1 & 3 Baghouse; Double Bell and Hopper, Dust Catcher/Venturi Scrubber and Cooling Tower for BFG Cleaning

Unit:	**Blast Furnace No. 1 Stoves**
Max. Capacity:	495 MMBtu/hr Rated Capacity (Total for 3 Stoves)
Date Installed:	Unknown
Fuel/Raw Material:	Blast Furnace Gas, Supplemented with Coke Oven Gas and Natural Gas
Exhaust	Stack S001; 171,000 SCFM
Emission controls:	None

Unit:	**Blast Furnace No. 3 & Casthouse**
Max. Capacity:	1,752,000 TPY
Date installed:	Unknown
Fuel/Raw Material:	Coke, Iron-Bearing Materials, Fluxes
Exhaust	Stack S002 (Blast Furnace Baghouse); 284,000 SCFM
Emission controls:	Blast Furnace Nos. 1 & 3 Baghouse; Double Bell and Hopper, Dust Catcher/Venturi Scrubber and Cooling Tower for BFG Cleaning

Unit:	**Blast Furnace No. 3 Stoves**
Max. Capacity:	495 MMBtu/hr Rated Capacity (Total for 3 Stoves)
Date Installed:	Unknown
Fuel/Raw Material:	Blast Furnace Gas, Supplemented with Coke Oven Gas and Natural Gas
Exhaust	Stack S004; 170,174 SCFM
Emission controls:	None

Unit:	**Blast Furnace Gas Flare**
Max. Capacity:	26,280 MMCF/yr; 270 MMBtu/hr
Date Installed:	Unknown
Fuel/Raw Material:	Blast Furnace Gas
Exhaust	Stack S003; 105,000 SCFM
Emission controls:	N/A

Unit:	**BOP Shop**
Max. Capacity:	3, 467,500 TPY
Date Installed:	Unknown
Fuel/Raw Material:	Hot Metal (Iron), Flux Material, Alloy Additives
Exhaust	Stack S005 (Hot Metal Transfer/Desulfur. Baghouse); 220,000 ACFM Stack S006 (BOP Secondary (Fugitive) Baghouse); 497,000 ACFM Stacks S007, S008 (BOP Shop Venturi Scrubber Stacks); 280,000 ACFM
Emission controls:	Hot Metal Transfer/Desulfurization Baghouse; BOP Shop Secondary (Fugitive) Baghouse; BOP Shop Venturi Scrubber; Four (4) Material Handling Baghouses

Emission Unit Data

Unit:	**Ladle Metallurgy Facility and Dual Strand Caster**
Max. Capacity:	3, 467,500 TPY
Date Installed:	1992
Fuel/Raw Material:	Liquid (Molten) Steel, Fluxes
Exhaust	Stack S009 (LMF Baghouse); 70,000 ACFM
Emission controls:	LMF Baghouse; Baghouse for LMF Tripper Car (Conveyor System); Baghouse for Pneumatic Lime Bin Feeder System; Small Dust Collectors to Control PM Emissions from Caster Shroud Cleaning, Slab Grinding, Tundish Maintenance, and the Caster Mold Flux Feeder System

Unit:	**Vacuum Degasser**
Max. Capacity:	1,200,000 TPY
Date Installed:	1996
Fuel/Raw Material:	Liquid (Molten) Steel, Alloying Materials
Exhaust	Stack S011 (CO Flare)
Emission controls:	Smokeless CO Flare

Unit:	**Riley Boiler No. 1**
Max. Capacity:	525 MMBtu/hr Rated Capacity
Date Installed:	1943
Fuel/Raw Material:	BFG, COG, NG
Exhaust	Stack S012
Emission controls:	N/A

Unit:	**Riley Boiler No. 2**
Max. Capacity:	525 MMBtu/hr Rated Capacity
Date Installed:	1943
Fuel/Raw Material:	BFG, COG, NG
Exhaust	Stack S013
Emission controls:	N/A

Unit:	**Riley Boiler No. 3**
Max. Capacity:	525 MMBtu/hr Rated Capacity
Date Installed:	1943
Fuel/Raw Material:	BFG, COG, NG
Exhaust	Stack S014
Emission controls:	N/A

Unit:	**Blast Furnace Slag Pits**
Max. Capacity:	581,565 TPY
Date Installed:	1995
Fuel/Raw Material:	Blast Furnace Slag
Exhaust	N/A
Emission controls:	N/A

Emission Unit Data

Unit:	**Bulk Materials Storage and Handling**
Max. Capacity:	5,070,265 TPY Throughput Capacity
Date Installed:	N/A
Fuel/Raw Material:	Blast Furnace Raw Materials (i.e., Coke, Iron-Bearing Materials, Fluxes), Blast Furnace Flue Dust
Exhaust	N/A
Emission controls:	Wet Suppression

Unit:	**Plant Roads**
Max. Capacity:	2.22 mi. Paved roads; 0.82 mi. Unpaved Roads; 8 acres Parking Lots
Date Installed:	N/A
Fuel/Raw Material:	N/A
Exhaust	N/A
Emission controls:	Wet Suppression; Chemical Treatment; Paved Road Sweeping

Result of the Wastewater Treatment Analysis

PARAMETER	METHOD	DL	UNITS	River Intake	005	006	006	006	008	009	009	009	106	INFLUENT 106	EFFLUENT 106	106	109	INFLUENT 109	EFFLUENT 109	109	209	INFLUENT 209	EFFLUENT 209	209
				3/21/2006	3/21/2006	3/21/2006	3/24/2006	3/25/2006	3/21/2006	3/21/2006	3/24/2006	3/25/2006	3/21/2006	3/24/2006	3/24/2006	3/25/2006	3/21/2006	3/24/2006	3/24/2006	3/25/2006	3/21/2006	3/24/2006	3/24/2006	3/25/2006
NPDES Pollutants, 1M-28M 03/24/06 CMC																								
Mercury	EPA 245.1	0.2	ug/L	<0.2		<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Volatiles (NPDES) EPA 624 03/22/06 LAM																								
Acrolein		100 ug/L	ug/L	<100		<100	<100	<100		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Acrylonitrile		100 ug/L	ug/L	<100		<100	<100	<100		<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Benzene		5ug/L	ug/L	<5		<5	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bromoform		5ug/L	ug/L	<5		<5	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	15	<5	<5	50
Carbon Tetrachloride		5ug/L	ug/L	<5		<5	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chlorobenzene		5ug/L	ug/L	<5		<5	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chlorodibromomethane		5ug/L	ug/L	<5		<5	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	32	<5	<5	19
Chloroethane		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2-Chloroethylvinyl ether		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Chloroform		5ug/L	ug/L	<5		<5	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	15	<5	<5	<5
Dichlorobromomethane		5ug/L	ug/L	<5		<5	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	19	<5	<5	7
1,1-Dichloroethane		5ug/L	ug/L	<5		<5	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroethane		5ug/L	ug/L	<5		<5	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethylene		5ug/L	ug/L	<5		<5	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloropropane		5ug/L	ug/L	<5		<5	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,3-Dichloropropylene		5ug/L	ug/L	<5		<5	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene		5ug/L	ug/L	<5		<5	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Methyl Bromide		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Methyl Chloride		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Methylene Chloride		5ug/L	ug/L	<5		<5	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane		5ug/L	ug/L	<5		<5	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Tetrachloroethylene		5ug/L	ug/L	<5		<5	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Toluene		5ug/L	ug/L	<5		<5	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,2-trans-Dichloroethylene		5ug/L	ug/L	<5		<5	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1,1-Trichloroethane		5ug/L	ug/L	<5		<5	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane		5ug/L	ug/L	<5		<5	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethylene		5ug/L	ug/L	<5		<5	<5	<5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl Chloride		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Total Semivolatiles (NPDES) EPA 625 03/30/06 MSM																								
2-Chlorophenol		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2,4-Dichlorophenol		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2,4-Dimethylphenol 1		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
4,6-Dinitro-o-cresol		50 ug/L	ug/L	<50		<50	<50	<50		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
2,4-Dinitrophenol		50 ug/L	ug/L	<50		<50	<50	<50		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
2-Nitrophenol		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	15	<10	<10	<10	<10	<10	<10	<10
4-Nitrophenol		50 ug/L	ug/L	<50		<50	<50	<50		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
p-Chloro-m-cresol		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Pentachlorophenol		50 ug/L	ug/L	<50		<50	<50	<50		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Phenol		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	48	22	23	<10	<10	<10	<10	<10
2,4,6-Trichlorophenol		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Acenaphthene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Acenaphthylene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Anthracene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Benzidine		50 ug/L	ug/L	<50		<50	<50	<50		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Benzo(a)anthracene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Benzo(a)pyrene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
3,4-Benzofluoranthene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Benzo(k)fluoranthene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Bis(2-chloroethoxy)methane		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Bis(2-chloroethyl)ether		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Bis(2-chloroisopropyl)ether		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Bis(2-ethylhexyl)phthalate		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
4-Bromophenyl phenyl ether		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Butylbenzyl phthalate		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2-Chloronaphthalene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
4-Chlorophenyl phenyl ether		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Chrysene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Dibenzo(a,h)anthracene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,2-Dichlorobenzene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,3-Dichlorobenzene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,4-Dichlorobenzene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
3,3'-Dichlorobenzidine		50 ug/L	ug/L	<50		<50	<50	<50		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Diethyl phthalate		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Dimethyl phthalate		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Di-(n-butyl)phthalate		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2,4-Dinitrotoluene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2,6-Dinitrotoluene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Di-(n-octyl)phthalate		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,2-Diphenylhydrazine		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Fluoranthene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Fluorene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hexachlorobenzene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hexachlorobutadiene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hexachlorocyclopentadiene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Hexachloroethane		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Indeno(1,2,3-cd)pyrene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Isophorone		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Naphthalene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Nitrobenzene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
N-Nitroso-dimethylamine		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
N-Nitroso-di-n-propylamine		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
N-Nitroso-diphenylamine		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Phenanthrene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Pyrene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,2,4-Trichlorobenzene		10 ug/L	ug/L	<10		<10	<10	<10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

* DL was 10 ug/L