National Pollutant Discharge Elimination System (NPDES) Permit Program

FACT SHEET

Regarding an NPDES Permit To Discharge to Waters of the State of Ohio
for TimkenSteel Corporation

Public Notice No.: 16-11-094
Public Notice Date: November 29, 2016
Comment Period Ends: December 29, 2016

Ohio EPA Permit No.: 3ID00021*MD
Application No.: OH0004219

Name and Address of Applicant:
TimkenSteel Corporation - Canton
1835 Dueber Ave. SW
Canton, Ohio 44706

Name and Address of Facility Where Discharge Occurs:
TimkenSteel Corporation - Canton
3100 Gambrinus Ave. SW
Canton, OH 44706
Stark County

Receiving Water: Domer Ditch and Hurford Run

Subsequent Stream Network: Nimishillen Creek to Sandy Creek to Tuscarawas River to the Muskingum River to the Ohio River

Introduction

Development of a Fact Sheet for NPDES permits is mandated by Title 40 of the Code of Federal Regulations (CFR), Section 124.8 and 124.56. This document fulfills the requirements established in those regulations by providing the information necessary to inform the public of actions proposed by the Ohio Environmental Protection Agency (Ohio EPA), as well as the methods by which the public can participate in the process of finalizing those actions.

This Fact Sheet is prepared in order to document the technical basis and risk management decisions that are considered in the determination of water quality based NPDES Permit effluent limitations. The technical basis for the Fact Sheet may consist of evaluations of promulgated effluent guidelines, existing effluent quality, instream biological, chemical and physical conditions, and the relative risk of alternative effluent limitations. This Fact Sheet details the discretionary decision-making process empowered to the Director by the Clean Water Act (CWA) and Ohio Water Pollution Control Law (Ohio Revised Code [ORC] 6111). Decisions to award variances to Water Quality Standards (WQS) or promulgated effluent guidelines for economic or technological reasons will also be justified in the Fact Sheet where necessary.

No antidegradation review was necessary.

Effluent limits based on available treatment technologies are required by Section 301(b) of the CWA. Many of these have already been established by the United States Environmental Protection Agency (U.S. EPA) in the effluent guideline regulations (a.k.a. categorical regulations) for industry categories in 40 CFR Parts 405-499. Technology-based regulations for publicly-owned treatment works are listed in the Secondary Treatment Regulations (40 CFR Part 133). If regulations have not been established for a category of dischargers, the director may establish technology-based limits based on best professional judgment (BPJ).

Ohio EPA reviews the need for water-quality-based limits on a pollutant-by-pollutant basis. Wasteload allocations (WLAs) are used to develop these limits based on the pollutants that have been detected in the discharge, and the receiving water's assimilative capacity. The assimilative capacity depends on the flow in the water receiving the discharge, and the concentration of the pollutant upstream. The greater the upstream flow, and the lower the upstream concentration, the greater the assimilative capacity is. Assimilative capacity may represent dilution (as in allocations for metals), or it may also incorporate the break-down of pollutants in the receiving water (as in allocations for oxygen-demanding materials).

The need for water-quality-based limits is determined by comparing the WLA for a pollutant to a measure of the effluent quality. The measure of effluent quality is called Projected Effluent Quality (PEQ). This is a statistical measure of the average and maximum effluent values for a pollutant. As with any statistical method, the more data that exists for a given pollutant, the more likely that PEQ will match the actual observed data. If there is a small data set for a given pollutant, the highest measured value is multiplied by a statistical factor to obtain a PEQ; for example if only one sample exists, the factor is 6.2, for two samples - 3.8, for three samples - 3.0. The factors continue to decline as samples sizes increase. These factors are intended to account for effluent variability, but if the pollutant concentrations are fairly constant, these factors may make PEQ appear larger than it would be shown to be if more sample results existed.

Summary of Permit Conditions

The effluent limits and monitoring requirements proposed for the following parameters are the same as in the previous permit: flow rate, water temperature, pH, fluoride, total suspended solids (TSS), and total filterable residue (dissolved solids).

Except for selenium, testing for metals shall now be for "total" instead of "total recoverable". This change is in accordance with the categorical standards in 40 CFR 420 and 433 and with OAC 3745-33-05(C)(4).

New effluent limits are proposed for copper and silver. Limits for copper and silver are required by the categorical standard 40 CFR 433. Monitoring for copper and silver shall be conducted on a monthly basis. A 36-month compliance schedule for the new silver limits are included in the permit.

Due to an increase in plant flow, changes in production, and/or Antidegradation, lower effluent limits are proposed for the following parameters:

- Oil and Grease – monthly average loading limit
- Chromium – concentration and loading limits
- Lead –daily maximum concentration and loading limits
- Nickel – concentration limits and loading limits
- Zinc – concentration and loading limits
- Total Toxic Organics (TTO) – concentration and loading limits

New quarterly monitoring is proposed for phosphorus and selenium. Monitoring for phosphorus is based on best technical judgment (BTJ). Monitoring for selenium is based on reasonable potential for the discharge to exceed WQS for this parameter.

Monitoring requirements are proposed to be removed for cadmium and total cyanide because TimkenSteel requested a monitoring waiver for these pollutants. Per 40 CFR 122.44(a)(2), Ohio EPA granted this request. This decision is supported by the fact that recent data demonstrates that these parameters are not present at the discharge point.

In accordance with Ohio Administrative Code (OAC) 3745-33-07, it has been determined that the effluent from TimkenSteel does not show acute toxicity to *Ceriodaphnia dubia*. However, annual monitoring without limits is

proposed to continue due to the fact that the receiving stream is impaired for aquatic life. Monitoring is proposed to occur in August instead of September to provide more diverse data.

To ensure that data is obtained that allows Ohio EPA to make water quality-related decisions regarding copper, selenium, and silver, a special condition is proposed in Part II of the permit that provides guidance on the analytical method detection limits (MDLs) the permittee should use in analyzing for these contaminants.

In Part II of the permit, special conditions are included that address storm water compliance; whole effluent toxicity (WET) testing; dissolved metal translator (DMT) study; tracking requirements; method detection levels; pH excursions; silver monitoring waiver; and outfall signage.

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Procedures for Participation in the Formulation of Final Determinations

The draft action shall be issued as a final action unless the Director revises the draft after consideration of the record of a public meeting or written comments, or upon disapproval by the Administrator of the U.S. Environmental Protection Agency.

Within thirty days of the date of the Public Notice, any person may request or petition for a public meeting for presentation of evidence, statements or opinions. The purpose of the public meeting is to obtain additional evidence. Statements concerning the issues raised by the party requesting the meeting are invited. Evidence may be presented by the applicant, the state, and other parties, and following presentation of such evidence other interested persons may present testimony of facts or statements of opinion.

Requests for public meetings shall be in writing and shall state the action of the Director objected to, the questions to be considered, and the reasons the action is contested. Such requests should be addressed to:

Legal Records Section
Ohio Environmental Protection Agency
P.O. Box 1049
Columbus, Ohio 43216-1049

Interested persons are invited to submit written comments upon the discharge permit. Comments should be submitted in person or by mail no later than 30 days after the date of this Public Notice. Deliver or mail all comments to:

Ohio Environmental Protection Agency
Attention: Division of Surface Water
Permits Processing Unit
P.O. Box 1049
Columbus, Ohio 43216-1049

The Ohio EPA permit number and Public Notice numbers should appear on each page of any submitted comments. All comments received no later than 30 days after the date of the Public Notice will be considered.

Citizens may conduct file reviews regarding specific companies or sites. Appointments are necessary to conduct file reviews, because requests to review files have increased dramatically in recent years. The first 250 pages copied are free. For requests to copy more than 250 pages, there is a five-cent charge for each page copied. Payment is required by check or money order, made payable to Treasurer State of Ohio.

For additional information about this fact sheet or the draft permit, contact Phoebe Low, 614-644-2134, Phoebe.Low@epa.ohio.gov or Ynes Arocho, 330-963-1203, Ynes.Arocho@epa.ohio.gov.

Information Regarding Certain Water Quality Based Effluent Limits

This draft permit may contain proposed water-quality-based effluent limits (WQBELs) for parameters that **are not** priority pollutants. (See the following link for a list of the priority pollutants: http://epa.ohio.gov/portals/35/pretreatment/Pretreatment_Program_Priority_Pollutant_Detection_Limits.pdf .) In accordance with ORC 6111.03(J)(3), the Director established these WQBELs after considering, to the extent consistent with the Federal Water Pollution Control Act, evidence relating to the technical feasibility and economic reasonableness of removing the polluting properties from those wastes and to evidence relating to conditions calculated to result from that action and their relation to benefits to the people of the state and to

accomplishment of the purposes of this chapter. This determination was made based on data and information available at the time the permit was drafted, which included the contents of the timely submitted NPDES permit renewal application, along with any and all pertinent information available to the Director.

This public notice allows the permittee to provide to the Director for consideration during this public comment period additional site-specific pertinent and factual information with respect to the technical feasibility and economic reasonableness for achieving compliance with the proposed final effluent limitations for these parameters. The permittee shall deliver or mail this information to:

Ohio Environmental Protection Agency
Attention: Division of Surface Water
Permits Processing Unit
P.O. Box 1049
Columbus, Ohio 43216-1049

Should the applicant need additional time to review, obtain or develop site-specific pertinent and factual information with respect to the technical feasibility and economic reasonableness of achieving compliance with these limitations, written notification for any additional time shall be sent to the above address no later than 30 days after the Public Notice Date on Page 1.

Should the applicant determine that compliance with the proposed WQBELs for parameters other than the priority pollutants is technically and/or economically unattainable, the permittee may submit an application for a variance to the applicable WQS used to develop the proposed effluent limitation in accordance with the terms and conditions set forth in OAC 3745-33-07(D). The permittee shall submit this application to the above address no later than 30 days after the Public Notice Date.

Alternately, the applicant may propose the development of site-specific WQS pursuant to OAC 3745-1-35. The permittee shall submit written notification regarding their intent to develop site specific WQS for parameters that are not priority pollutants to the above address no later than 30 days after the Public Notice Date.

Location of Discharge/Receiving Water Use Classification

TimkenSteel Corporation (TimkenSteel) discharges to Domer Ditch at River Mile (RM) 0.08. Figure 1 shows the approximate location of the facility.

This segment of the Domer Ditch is described by Ohio EPA River Codes: 17-468 or 17-460-002, Hydrologic Unit Code (HUC): 05040001-05-05, County: Stark, Ecoregion: Erie/Ontario Lake Hills & Plains. Domer Ditch is designated for the following uses under Ohio's WQS (OAC 3745-1-24): Warmwater Habitat, Agricultural Water Supply (AWS), Industrial Water Supply (IWS), and Secondary Contact Recreation.

Domer Ditch discharges to Hurford Run at RM 1.72. This segment of the Hurford Run is described by Ohio EPA River Code: 17-460-001, HUC: 05040001-05-05, County: Stark, Ecoregion: Erie/Ontario Lake Hills & Plains. At the point of confluence with Domer Run, Hurford Run is designated for the following uses under Ohio's WQS (OAC 3745-1-24): Limited Resource Water, AWS, IWS, and Primary Contact Recreation. Immediately downstream of the confluence, Hurford Run is designated for Modified Warmwater Habitat (RM 1.71 – 0.8) and Warmwater Habitat (RM 0.8 – confluence with Nimishillen Creek).

Use designations define the goals and expectations of a waterbody. These goals are set for aquatic life protection, recreation use and water supply use, and are defined in the Ohio WQS (OAC 3745-1-07). The use designations for individual waterbodies are listed in rules -08 through -32 of the Ohio WQS. Once the goals are set, numeric WQS are developed to protect these uses. Different uses have different water quality criteria.

Use designations for aquatic life protection include habitats for coldwater fish and macroinvertebrates, warmwater aquatic life and waters with exceptional communities of warmwater organisms. These uses all meet the goals of the federal CWA. Ohio WQS also include aquatic life use designations for waterbodies which cannot meet the CWA goals because of human-caused conditions that cannot be remedied without causing fundamental changes to land use and widespread economic impact. The dredging and clearing of some small streams to support agricultural or urban drainage is the most common of these conditions. These streams are given Modified Warmwater or Limited Resource Water designations.

Recreation uses are defined by the depth of the waterbody and the potential for wading or swimming. Uses are defined for bathing waters, swimming/canoeing (Primary Contact Recreation) and wading only (Secondary Contact which are generally waters too shallow for swimming or canoeing).

Water supply uses are defined by the actual or potential use of the waterbody. Public Water Supply designations apply near existing water intakes so that waters are safe to drink with standard treatment. Most other waters are designated for agricultural water supply and industrial water supply.

Facility Description

The process operations at TimkenSteel are classified in the Standard Industrial Classification (SIC) category 3312, "Steel Works, Blast Furnaces (Including Coke Ovens), and Rolling Mills." Timken's Canton location consists of four facilities – Faircrest Steel Plant (Faircrest), Harrison Steel Plant (Harrison), and Gambrinus Steel Plant (Gambrinus), and Gambrinus Roller Plant (Roller Plant). The Gambrinus Bearing Plant had shut down production in 2010. Process wastewater from all four facilities is discharged to TimkenSteel's wastewater treatment plant. See Attachment 1 for production data.

Faircrest Steel Plant

Faircrest manufactures alloy steel blooms, billets, and bars, as well as carbon and microalloy steel. Faircrest has the capacity to produce approximately two million melt tons of steel per year.[1] At the end of 2014, a vertical caster was added to the process line. The industrial processes at the facility include:

- Vacuum Degassing
- Continuous Caster (vertical)
- Forge Press
- Hot Forming (Blooming Mill and Billet Mill)
- Scarfing

Harrison Steel Plant
Harrison manufactures specialty carbon and alloy steels in the forms of billets and bars. The annual production capacity is 630,000 melt tons and 850,000 roll tons.[2] The industrial processes at the facility include:

- Vacuum Degassing
- Continuous Caster
- Hot Forming (Billet Mill and two Bar Mills)

Gambrinus Steel Plant
Gambrinus manufactures specialty alloy steel tubing (seamless). Gambrinus has an annual production capacity of 350,000 tons of tube.[3] In 2013, a new intermediate finishing line (IFL) was added to Gambrinus. By 2014, acid pickling and zinc phosphating no longer discharged to the treatment plant. The industrial processes at the facility include:

- Hot Forming (Piercing Mills)
- Water Blasting (IFL)
- Thermal Treatment / Quenching (IFL)
- Cold Forming (Cold Draw)
- Alkaline Cleaning

Gambrinus Roller Plant
The Roller Plant produces rollers and is owned by Timken Corporation instead of TimkenSteel. This facility discharges wastewater at a rate of 30 gallons per minute (gpm). Process wastewater (16.75 gpm) includes isotropic finishing, heat treat tumble washes, oily waters from steam cleaning sump and washes, and oily waters collected in sumps and pits located throughout the plant. Non-process water (13.25 gpm) contains reverse osmosis water and condensate from air compressors. Timken Corporation submits discharge flow reports to TimkenSteel on a monthly basis.

The process wastewaters generated from these operations are regulated under Title 40 of the Code of Federal Regulations (CFR):

- 40 CFR 420, "Iron and Steel Manufacturing Point Source Category"
    - Subpart E, "Vacuum Degassing Subcategory"
    - Subpart F, "Continuous Casting Subcategory"
    - Subpart G, "Hot Forming Subcategory"
    - Subpart J, "Cold Forming Subcategory"

[1] TimkenSteel Corporation. (2014). *Your Guide to the Faircrest Steel Plant* [Brochure]. Canton, OH.
[2] TimkenSteel Corporation. (2014). *Your Guide to the Harrison Steel Plant* [Brochure]. Canton, OH.
[3] TimkenSteel Corporation. (2014). *Your Guide to the Gambrinus Steel Plant* [Brochure]. Canton, OH.

    - Subpart K, "Alkaline Cleaning Subcategory"
- 40 CFR 433, "Metal Finishing Point Source Category"
    - Subpart A, "Metal Finishing Subcategory"

TimkenSteel uses water from the City of Canton in its plants' processes. TimkenSteel also maintains groundwater wells to supply additional process water needs.

TimkenSteel is also covered under the NPDES Industrial Storm Water General Permit 3GR00394*EG, which was issued on November 26, 2012.

Description of Existing Discharge

Outfall 015 discharges to Domer Ditch and is the only outfall discharging treated process wastewater. Process wastewater is treated by the following processes:

- Oil Processor (Figure 2)
    - Coagulation (polymer & alum)
    - Corrugated plate separator
    - Dissolved Air Floatation Unit
- Water Treatment Plant (Figure 3)
    - Coagulation (alum chloride & polymer)
    - Settling (three clarifiers)
    - pH adjustment (sulfuric acid & hydrochloric acid)
    - Cooling (cooling towers & cooling pond)
    - Filtration (four deep bed filters)
    - Solids vacuum filters

Approximately 90 percent of the treated process wastewater is pulled from the cooling pond and recycled at the steel mills. Sanitary waste is discharged to the City of Canton Water Reclamation Facility's collection system. Figure 4 presents a diagram of the process wastewater flows throughout the facilities prior to the treatment plant.

The facility used to discharge non-contact cooling water through Outfall 019, but the discharge is limited to city storm water because process wastewater flows have been discontinued at this outfall. No monitoring requirements are needed for Outfall 019.

Table 1 is a summary of Outfall 015.

Table 2 summarizes recent effluent violations at Outfall 015 between May 2011 and April 2016.

Table 3 provides the average flow rates for Outfall 015. The 95th percentile of the monthly average discharge of Outfall 015 is 4.0 million gallons per day (MGD). However, TimkenSteel requested that the flow rate of 3.5 MGD is used for wasteload and loading calculations because this value was used in the previous permit and because the permittee believes that 3.5 MGD is more representative of future flows. The difference in flows does not result in significant differences in permit conditions.

Table 4 summarizes data compiled from the NPDES permit renewal application Form 2C.

Table 5 presents a summary of unaltered data from the Discharge Monitoring Report (DMR). Data is presented for the period of May 2011 to April 2016, and current permit limits are provided for comparison.

Table 6 summarizes the chemical specific data for Outfall 015 by presenting the average and maximum PEQ values.

Table 7 summarizes the results of acute WET tests of the final effluent.

Assessment of Impact on Receiving Waters

The stream segments associated with TimkenSteel's effluent discharge (Domer Ditch and Hurford Run) have been identified as a priority impaired water on Ohio's 303(d) list.

A Total Daily Maximum Load (TMDL) report was approved for the Nimishillen Creek Watershed in December 2009. The March 24, 2015, Supreme Court of Ohio decision *Fairfield Cty. Bd. Of Commrs. v. Nally, Slip Opinion No. 2015-Ohio-991* vacated all previously approved TMDLs. As of January 2017, this TMDL is considered a technical guidance document pending final TMDL approval.

An assessment of the impact of a permitted point source on the immediate receiving waters includes an evaluation of the available chemical/physical, biological, and habitat data which have been collected by Ohio EPA pursuant to the Five-Year Basin Approach for Monitoring and NPDES Reissuance. Other data may be used provided it was collected in accordance with Ohio EPA methods and protocols as specified by the Ohio WQS and Ohio EPA guidance documents. Other information which may be evaluated includes, but is not limited to: NPDES permittee self-monitoring data; effluent and mixing zone bioassays conducted by Ohio EPA, the permittee, or U.S. EPA.

In evaluating this data, Ohio EPA attempts to link environmental stresses and measured pollutant exposure to the health and diversity of biological communities. Stresses can include pollutant discharges (permitted and unpermitted), land use effects, and habitat modifications. Indicators of exposure to these stresses include whole effluent toxicity tests, fish tissue chemical data, and fish health biomarkers (for example, fish blood tests).

Use attainment is a term which describes the degree to which environmental indicators are either above or below criteria specified by the Ohio WQS (OAC 3745-1). Assessing use attainment status for aquatic life uses primarily relies on the Ohio EPA biological criteria (OAC 3745-1-07; Table 7-15). These criteria apply to rivers and streams outside of mixing zones. Numerical biological criteria are based on measuring several characteristics of the fish and macroinvertebrate communities; these characteristics are combined into multimetric biological indices including the Index of Biotic Integrity and modified Index of Well-Being, which indicate the response of the fish community, and the Invertebrate Community Index, which indicates the response of the macroinvertebrate community. Numerical criteria are broken down by ecoregion, use designation, and stream or river size. Ohio has five ecoregions defined by common topography, land use, potential vegetation and soil type.

Three attainment status results are possible at each sampling location -full, partial, or non-attainment. Full attainment means that all of the applicable indices meet the biocriteria. Partial attainment means that one or more of the applicable indices fails meet the biocriteria. Nonattainment means that either none of the applicable indices meet the biocriteria or one of the organism groups indicates poor or very poor performance. An aquatic life use attainment table (see Table 8) is constructed based on the sampling results and is arranged from upstream to downstream and includes the sampling locations indicated by river mile, the applicable biological indices, the use attainment status (i.e., full, partial, or non), the Qualitative Habitat Evaluation Index, and comments and observations for each sampling location.

While an attainment status has not been determined for Domer's Ditch, the aquatic life use attainment table in Table 8 shows that the subsequent stream, Hurford Run, is impaired.

According to the TMDL, the relevant segment of the Nimishillen Creek Watershed is impaired for thermal pollution, ammonia, and pH due to the following major causes: flow alteration, wastewater treatment plant discharges, nutrients, crop production, habitat, siltation, and septic tanks. No limits are required for water temperature despite the impairment for thermal pollution because the TMDL does not identify TimkenSteel as a contributor to the thermal loading and because of the possibility that other sources (i.e. interactive dischargers) may have been the cause. Although the Nimishillen Creek Watershed is impaired for ammonia, data from Table 5 and Attachment 5 support that TimkenSteel does not discharge ammonia in significant amounts. Therefore, monitoring is not required for this parameter.

The TMDL recommends phosphorus limits of 0.27 mg/L and 3.58 kg/day for TimkenSteel. Based on the information in Table 4, the phosphorus concentration was 0.14 mg/L and the load is 1.53 kg/day (based on a flow rate of 2.89 MGD). Though the information in Table 4 suggests that TimkenSteel is in full compliance with this recommended phosphorus limit, the calculations were based on only one data point. Ohio EPA proposes that phosphorus be monitored on a quarterly basis to confirm compliance with the limits recommended in the TMDL.

The full TMDL report for Nimishillen Creek Watershed can be found at this website under the Muskingum River:
http://www.epa.ohio.gov/dsw/tmdl/index.aspx

Development of Water-Quality-Based Effluent Limits

Determining appropriate effluent concentrations is a multiple-step process in which parameters are identified as likely to be discharged by a facility, evaluated with respect to Ohio water quality criteria, and examined to determine the likelihood that the existing effluent could violate the calculated limits.

Parameter Selection
Effluent data for the TimkenSteel were used to determine what parameters should undergo WLA. The parameters discharged are identified by the data available to Ohio EPA DMR data submitted by the permittee, compliance sampling data collected by Ohio EPA, and any other data submitted by the permittee, such as priority pollutant scans required by the NPDES application or by pretreatment, or other special conditions in the NPDES permit. The sources of effluent data used in this evaluation are as follows:

Self-monitoring data (DMR)	May 2011 through April 2016 (Table 5)
Additional self-monitoring	June 29 – July 11, 2016 for ammonia, copper, selenium, and silver (Attachment 5)
Form 2C Data	July 2015 (Table 4)

Non-Representative Data and Statistical Outliers
The data were examined and no values were removed from the evaluation.

This data is evaluated statistically, and PEQ values are calculated for each pollutant. Average PEQ (PEQ_{avg}) values represent the 95th percentile of monthly average data, and maximum PEQ (PEQ_{max}) values represent the 95th percentile of all data points (see Table 6).

The PEQ values are used according to Ohio rules to compare to applicable WQS and allowable WLA values for each pollutant evaluated. Initially, PEQ values are compared to the applicable average and maximum WQS. If both PEQ values are less than 25 percent of the applicable WQS, the pollutant does not have the reasonable

potential to cause or contribute to exceedances of WQS, and no WLA is done for that parameter. If either PEQ_{avg} or PEQ_{max} is greater than 25 percent of the applicable WQS, a WLA is conducted to determine whether the parameter exhibits reasonable potential and needs to have a limit or if monitoring is required (see Table 9).

Wasteload Allocation
For those parameters that require a WLA, the results are based on the uses assigned to the receiving waterbody in OAC 3745-1. Dischargers are allocated pollutant loadings/concentrations based on the Ohio WQS (OAC 3745-1). Most pollutants are allocated by a mass-balance method because they do not degrade in the receiving water. For free flowing streams, WLAs using this method are done using the following general equation: Discharger WLA = (downstream flow x WQS) - (upstream flow x background concentration). Discharger WLAs are divided by the discharge flow so that the allocations are expressed as concentrations. TimkenSteel's WLA in previous permits were calculated under the assumption that the discharge was interactive with the effluent from Marathon Petroleum. The WLA for this permit does not include interactive calculations because Marathon Petroleum planned to move its discharge point to Tuscarawas River by Summer 2017 (discharge to the Tuscarawas River began in October 2016).

The applicable waterbody uses for this facility's discharge and the associated stream design flows are as follows:

Aquatic life (Warmwater Habitat)		
Toxics (metals, organics, etc.)	Average	Annual 7Q10
	Maximum	Annual 1Q10
Ammonia	Average	Summer 30Q10
		Winter 30Q10
Agricultural Water Supply		Harmonic mean flow
Human Health (nondrinking)		Harmonic mean flow

Allocations are developed using a percentage of stream design flow as specified in Table 10, and allocations cannot exceed the Inside Mixing Zone Maximum (IMZM) criteria.

The data used in the WLA are listed in Table 9 and Table 10. The WLA results to maintain all applicable criteria are presented in Table 11.

Whole Effluent Toxicity WLA
Whole effluent toxicity (WET) is the total toxic effect of an effluent on aquatic life measured directly with a toxicity test. Acute WET measures short term effects of the effluent while chronic WET measures longer term and potentially more subtle effects of the effluent.

WQS for WET are expressed in Ohio's narrative "free from" WQS rule [OAC 3745-1-04(D)]. These "free froms" are translated into toxicity units (TUs) by the associated WQS Implementation Rule (OAC 3745-2-09). WLAs can then be calculated using TUs as if they were water quality criteria.

The WLA calculations for WET are similar to those for aquatic life criteria - using the chronic toxicity unit (TU_c) and 7Q10 flow for the average and the acute toxicity unit (TU_a) and 1Q10 flow for the maximum. These values are the levels of effluent toxicity that should not cause instream toxicity during critical low-flow conditions. For TimkenSteel, the WLA values for Outfall 015 are 0.3 TU_a and 1.01TU_c.

The chronic toxicity unit (TU_c) is defined as 100 divided by the estimate of the effluent concentration which causes a 25% reduction in growth or reproduction of test organisms (IC_{25}):

$$TU_c = 100/IC_{25}$$

This equation applies outside the mixing zone for warmwater, modified warmwater, exceptional warmwater, coldwater, and seasonal salmonid use designations except when the following equation is more restrictive (*Ceriodaphnia dubia* only):

TU_c = 100/geometric mean of No Observed Effect Concentration and Lowest Observed Effect Concentration

The acute toxicity unit (TU_a) is defined as 100 divided by the concentration in water having 50% chance of causing death to aquatic life (LC_{50}) for the most sensitive test species:

$$TU_a = 100/LC_{50}$$

This equation applies outside the mixing zone for warmwater, modified warmwater, exceptional warmwater, coldwater, and seasonal salmonid use designations.

When the acute WLA is less than 1.0 TU_a, it may be defined as:

Dilution Ratio (downstream flow to discharger flow)	Allowable Effluent Toxicity (percent effects in 100% effluent)
up to 2 to 1	30
greater than 2 to 1 but less than 2.7 to 1	40
2.7 to 1 to 3.3 to 1	50

The acute WLA for TimkenSteel is 30 percent mortality in 100 percent effluent based on the dilution ratio of 1.01 to 1.

Reasonable Potential/ Effluent Limits/Hazard Management Decisions

After appropriate effluent limits are calculated, the reasonable potential of the discharger to violate the WQS must be determined. Each parameter is examined and placed in a defined "group". Parameters that do not have a WQS or do not require a WLA based on the initial screening are assigned to either group 1 or 2. For the allocated parameters, the preliminary effluent limits (PEL) based on the most restrictive average and maximum WLAs are selected from Table 11. The average PEL (PEL_{avg}) is compared to the average PEQ (PEQ_{avg}) from Table 6, and the PEL_{max} is compared to the PEQ_{max}. Based on the calculated percentage of the allocated value [($PEQ_{avg} \div PEL_{avg}$) X 100, or ($PEQ_{max} \div PEL_{max}$) X 100)], the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 12.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 14 presents the final effluent limits and monitoring requirements proposed for TimkenSteel Outfall 015 and the basis for their recommendation. Unless otherwise indicated, the monitoring frequencies proposed in the permit are continued from the existing permit.

Flow Rate
Monitoring for this parameter is proposed to continue in order to evaluate the performance of the treatment plant.

pH and Water Temperature
Limits proposed for pH are based on WQS (OAC 3745-1-07). Monitoring requirements for water temperature are necessary to document compliance with the water quality temperature criteria (OAC 3745-1-07, Table 7-14(A)).

Limitations for pH excursions, as described in 40 CFR 401.17, shall not be implemented in this permit because of a lack of flow upstream of the discharge point. Because of the lack of dilution in the mixing zone, TimkenSteel shall meet the WQS for pH at all times.

TSS, Oil and Grease, Cadmium, Chromium, Copper, Cyanide, Lead, Nickel, Silver, Zinc, and TTO
The industrial processes of TimkenSteel are subject to ELGs which require production-based loading limits for these parameters. Unless a monitoring waiver has been requested by TimkenSteel and approved by Ohio EPA, all of these parameters require limits regardless of parameter grouping (Table 12). The limitation will be based upon the most stringent limit between WQS, ELG, and TimkenSteel's current permitted limit. Except for TSS and oil and grease, the concentration and loading limits for a pollutant shall correspond to the lowest limiting factor and the plant flow (3.5 MGD). Supplemental information regarding the ELG limit calculations are located in Attachments 1-3. Information regarding the implementation of limits is located in Attachment 4 of this document.

Limits Derived from ELG

- Oil and Grease (monthly average loading)
- Chromium (daily maximum)
- Lead (daily maximum)
- Nickel (daily maximum)
- Silver during interim (daily maximum, monthly average)
- Zinc (monthly average)
- TTO (daily maximum)

Limits Derived from WQS
In the case where loading limits derived from WQS (Table 11) are the lowest, WQS concentration limits shall take precedence.

- Chromium (monthly average)
- Copper (daily maximum, monthly average)
- Nickel (monthly average)
- Silver after interim (daily maximum, monthly average)
- Zinc (daily maximum)

Limits Derived from Antidegradation Provisions
Although the WLA and ELG would allow higher loading limits for some parameters, the Antidegradation provisions of OAC 3745-1-05 require that an antidegradation review must be completed before approving a limit which exceeds a current limit. TimkenSteel did not fulfill the requirements under OAC 3745-1-05; therefore, loading limits are restricted to the current loading limit in TimkenSteel's NPDES permit (3ID00021*LD).

- TSS (daily maximum, monthly average)
- Oil and Grease (daily maximum)
- Lead (monthly average)

Monitoring Waiver Request
In a letter from TimkenSteel dated December 17, 2015, the facility requested that the renewed NPDES permit removed monitoring for cadmium, copper, cyanide, and silver. As authorized in 40 CFR 122.44(a)(2), this request is granted for cadmium and cyanide because sampling (Tables 4 and 5) demonstrate that these pollutants are not present in the discharge. This decision is supported by the fact that the risk assessment (Table 12) places them in group 2. This placement, as well as the data in Tables 5,

6, and 11, support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality.

However, Ohio EPA cannot remove copper and silver from the permit because sampling in Tables 5 and Attachment 5 demonstrate that these pollutants are present in the discharge. 40 CFR 122.44(a)(2) specifies that "the discharger has to demonstrate that the pollutant is not present in the discharge or is present only at background levels from intake water and without any increase in the pollutant due to activities of the discharger." This decision is supported by the fact that the risk assessment (Table 12) places these parameters in group 4. This placement, as well as the data in Tables 5, 6, 11, and Attachment 5 indicate that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality. Because the monitoring waiver request for copper and silver has been denied by Ohio EPA, limits are required for these parameters because of 40 CFR 433. Although limits apply through the metal finishing activities (40 CFR 433), the ELG limits are higher (less protective) than the WQS. Despite these pollutants being in Group 4 of the risk assessment, Ohio EPA cannot issue limits that are not protective of the WQS; therefore, the final limits shall implement WQS limits in lieu of ELG limits.

A 36-month compliance schedule is included in the permit to meet the new silver limits. In the interim, limits based on ELG standards shall be enforced and TimkenSteel has the option to resubmit a request for a monitoring waiver. TimkenSteel did not request a compliance schedule for copper. Monitoring for these pollutants shall be on a monthly schedule.

Selenium
The Ohio EPA risk assessment (Table 12) places selenium in group 5, which recommends limits to protect water quality. Using the discretion allowed the Director under OAC 3745-33-07(A)(5), monitoring rather than limits is proposed for this parameter. The PEQ values calculated for selenium (Table 6) may not be representative of its actual levels in the plant effluent since they were based on one detected data point out of 14 observations. The purpose of the proposed monitoring is to collect additional data on the frequency of occurrence and variability of these pollutants in the plant's effluent.

In addition, the detected selenium value exceeds 75 percent of the WLA. Parameters from small data sets with values greater than 75 percent of the WLA need a tracking requirement in the permit that specifies reductions in pollutant concentrations if effluent concentrations exceed the WLA. The tracking/reduction requirements are included in Part II of the permit.

Total Filterable Residue (dissolved solids) and Fluoride
The Ohio EPA risk assessment (Table 12) places these parameters in group 4. This placement, as well as the data in Tables 5, 6, and 11, support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring for group 4 pollutants (where PEQ exceeds 50 percent of the WLA) is required by OAC 3745-33-07(A)(2). Monitoring for these parameters shall continue on a monthly basis.

Ammonia, Iron, Mercury, and Molybdenum
The Ohio EPA risk assessment (Table 12) places these parameters in group 2. This placement, as well as the data in Tables 5, 6, and 11, support that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. No new monitoring is proposed.

Phosphorus
Based on BTJ, monitoring is proposed for phosphorus. The *2014 Ohio Integrated Water Quality Monitoring and Assessment Report* (Ohio EPA) lists the Nimishillen Creek watershed as impaired for aquatic life. The report listed nutrient enrichment as one of the major causes of impairment and industrial point source is listed among the "high magnitude" sources of impairment at the Sherrick Run – Nimishillen Creek watershed

assessment unit. The TMDL also recommends phosphorus limits for TimkenSteel. Considering this information, quarterly monitoring for phosphorus is proposed based on BTJ. The purpose of the monitoring is to maintain a nutrient data set for use in the future TMDL study.

Whole Effluent Toxicity Reasonable Potential
Based on evaluating the WET data presented in Table 7 and other pertinent data under the provisions of OAC 3745-33-07(B), TimkenSteel is placed in Category 3 with respect to WET. No limits are proposed, but acute testing is proposed in August of every year for *Ceriodaphnia dubia* for the duration of the permit.

Other Requirements

Compliance Schedule – A 36-month compliance schedule is proposed for TimkenSteel to meet the new limits for silver. In the interim, the facility will comply with limits based on ELG standards. Details are in Part I.C of the permit.

Dissolved Metal Translator Study - If the permittee chooses to develop a DMT or water-effect ratio for copper, lead, silver, and zinc at Outfall 015, the permittee shall follow the schedule presented in Part II of the permit.

Total Toxic Organics (TTO) Certification Alternative
Under 40 CFR 433.12, TimkenSteel may submit a certification statement in lieu of sampling results.

Silver Monitoring Waiver
If the permittee chooses to reapply for a monitoring waiver for silver, the permittee shall follow the schedule and fulfill the requirements presented in Part II, Item O of the permit.

Method Detection Limit
The reported data for silver shows that TimkenSteel used an analytical method with a MDL that is not sensitive enough to properly evaluate the discharge with regard to the WLA for this parameter. As a result, Part II of the permit includes a condition requiring TimkenSteel to use an analytical method with an appropriate MDL.

Tracking
Though effluent limits do not apply to selenium, TimkenSteel is to send notification to Ohio EPA whenever this parameter exceeds 5 µg/L at the effluent. During certain conditions, TimkenSteel may be required to reduce discharge below this level.

Storm Water Compliance
To comply with industrial storm water regulations, the permittee requested coverage under the industrial storm water general permit OHR000005. Coverage under this permit was issued on April 16, 2012, as 3GR00539*EG. Unless prompted by Ohio EPA, the permittee must request renewed coverage under the industrial storm water general permit by April 15, 2017, or make other provisions to comply with the industrial storm water regulations.

Outfall Signage
Part II of the permit includes requirements for the permittee to place and maintain a sign at each outfall to the Domer Ditch providing information about the discharge. Signage at outfalls is required pursuant to OAC 3745-33-08(A).

Figure 1. Location of TimkenSteel and Outfalls

Note: Outfall 3ID00021-019 no longer discharges process wastewater and no longer requires coverage under this permit.

Figure 2. Diagram of Wastewater Treatment System

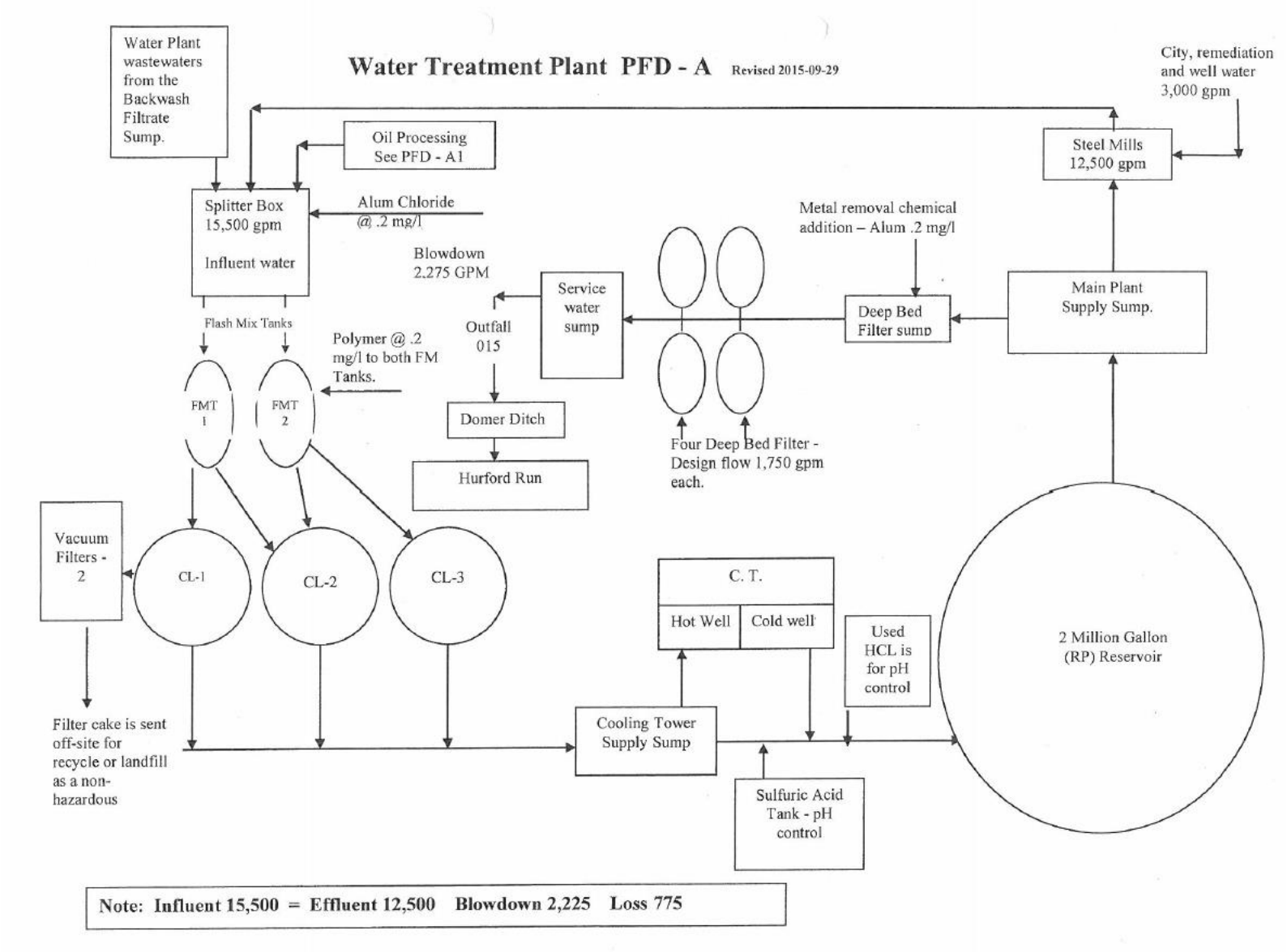


Figure 3. Oil Processing System

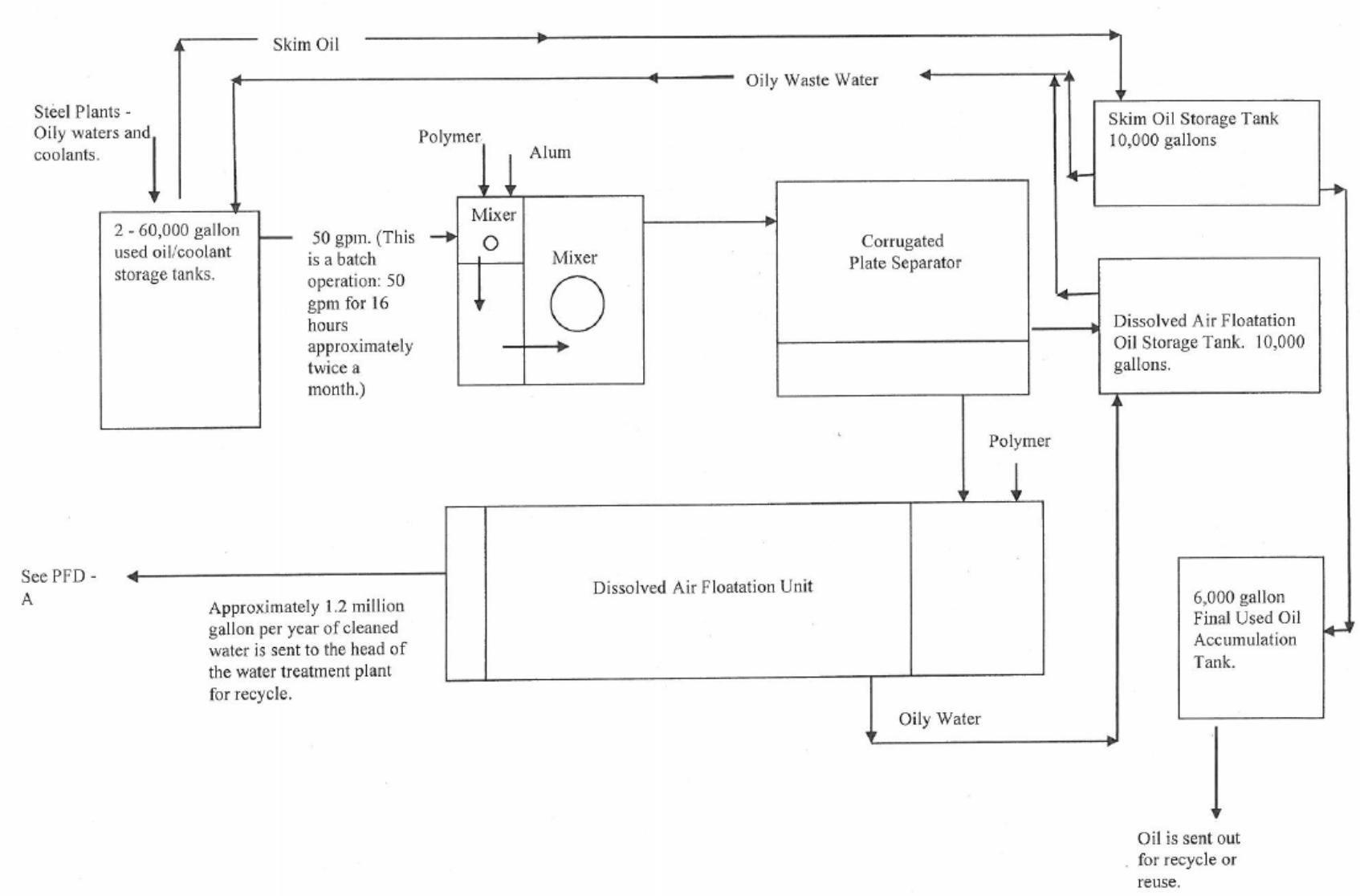
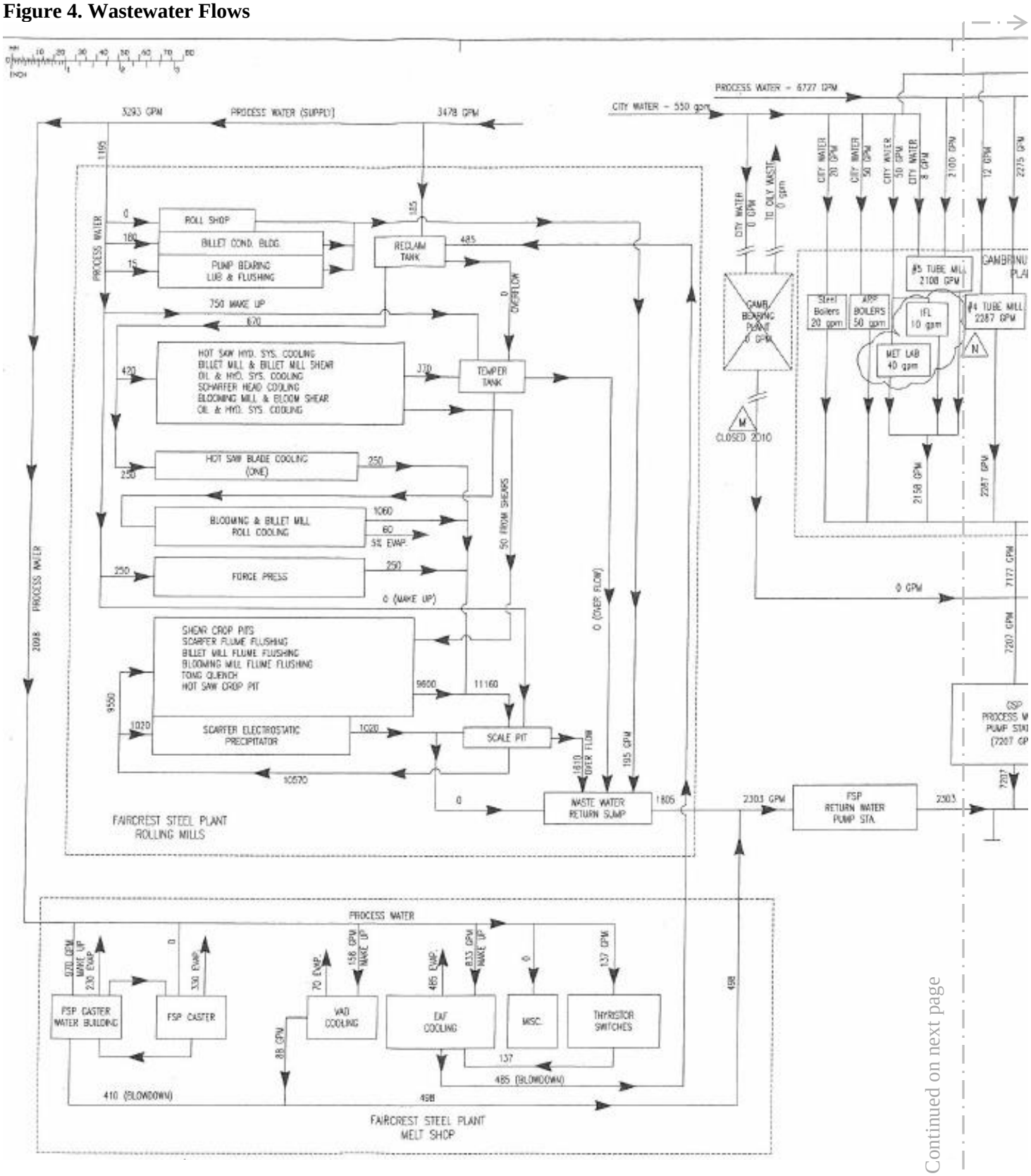


Figure 4. Wastewater Flows



*As of July 2016, the temper tank (3,740 gpm) and mold cooling tower at Faircrest Steel Plant do not discharge to Outfall 015

Figure 4. Wastewater Flows (continued)

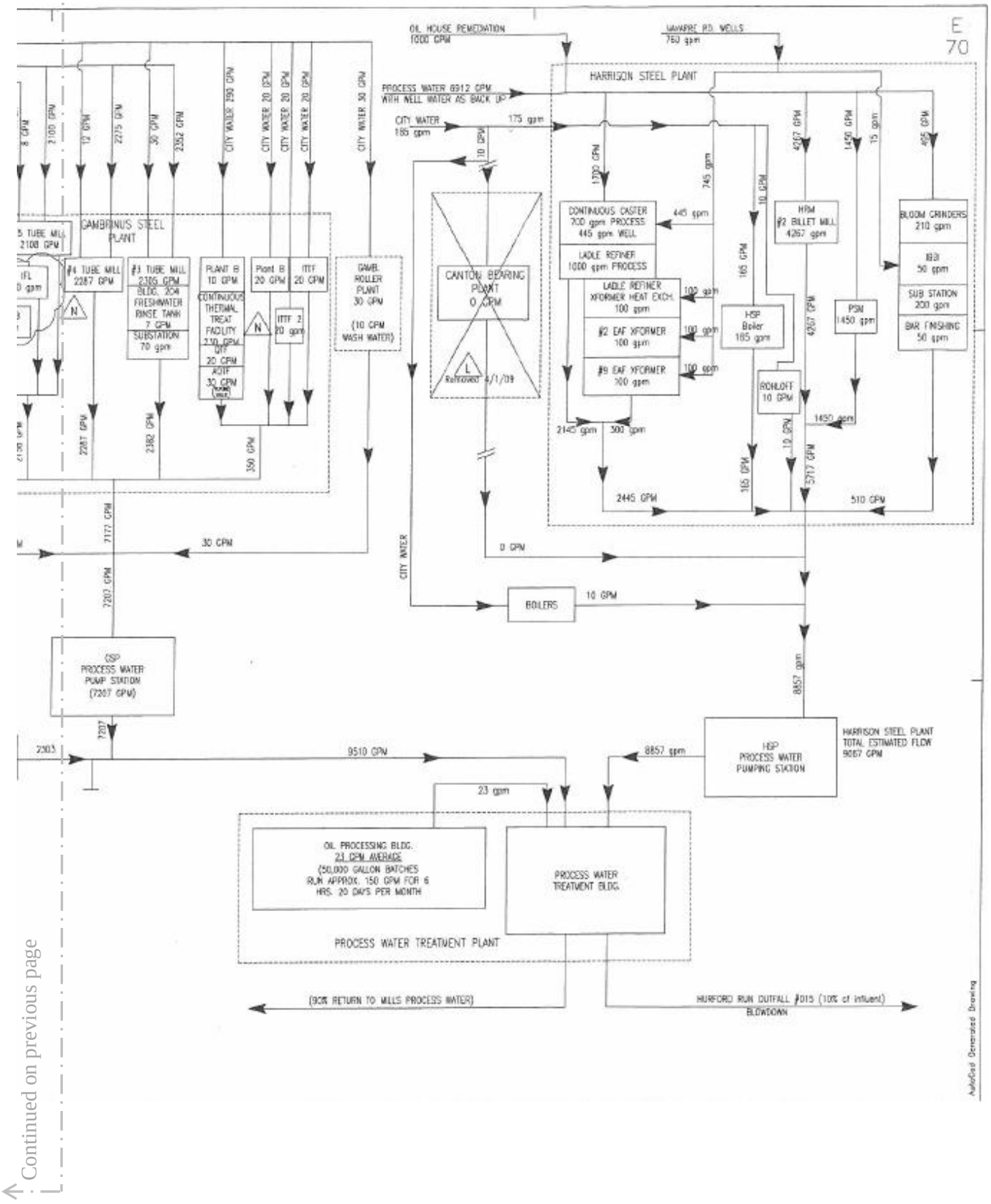


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Table 1. Monitoring Station, Treatment Processes, Discharge Point, and Flow Rate

Station #	Wastewater Source	Treatment Utilized	Discharge/ Receiving Stream	Average Flow Rate (MGD)
015	Wastewater Treatment Plant effluent Non-contact cooling water Stormwater	Chemical Coagulation Filtration Settling Cooling	Unnamed Tributary to Domer Ditch	3.5

Table 2. Effluent Violations for Outfall 015

Parameter	2011	2012	2013	2014	2015	2016*
pH (maximum)	0	0	2	0	0	0
Zinc	0	0	0	5	0	0
Total	*0*	*0*	*2*	*5*	*0*	*0*

* Months of January to May.

Table 3. Average Annual Effluent Flow Rates

Month	Flow Rates (MGD)			
	Monthly Average	50th Percentile	95th Percentile	Maximum
May-11	2.735			
Jun-11	2.843			
Jul-11	2.565			
Aug-11	2.084			
Sep-11	3.957			
Oct-11	3.584			
Nov-11	3.193			
Dec-11	2.661			
May – Dec. 2011	2.953	2.789	3.826	3.957
Jan-12	3.055			
Feb-12	2.828			
Mar-12	2.055			
Apr-12	2.620			
May-12	2.494			
Jun-12	2.463			
Jul-12	2.926			
Aug-12	2.442			
Sep-12	3.033			
Oct-12	2.865			
Nov-12	2.840			
Dec-12	2.416			
Jan.-Dec. 2012	2.670	2.724	3.043	3.055
Jan-13	2.755			
Feb-13	3.339			
Mar-13	2.884			
Apr-13	2.440			
May-13	2.668			
Jun-13	2.717			
Jul-13	2.361			
Aug-13	2.655			
Sep-13	3.423			
Oct-13	2.642			
Nov-13	2.753			
Dec-13	2.574			
Jan.-Dec. 2013	2.768	2.692	3.377	3.423

Month	Flow Rates (MGD)			
	Monthly Average	50th Percentile	95th Percentile	Maximum
Jan-14	3.639			
Feb-14	3.750			
Mar-14	2.958			
Apr-14	3.140			
May-14	3.871			
Jun-14	4.263			
Jul-14	3.171			
Aug-14	4.442			
Sep-14	4.137			
Oct-14	3.842			
Nov-14	2.987			
Dec-14	1.658			
Jan.-Dec. 2014	3.488	3.694	4.344	4.442
Jan-15	2.326			
Feb-15	3.339			
Mar-15	2.794			
Apr-15	1.960			
May-15	2.126			
Jun-15	3.327			
Jul-15	2.429			
Aug-15	3.161			
Sep-15	3.243			
Oct-15	3.029			
Nov-15	2.930			
Dec-15	2.897			
Jan.-Dec. 2015	2.797	2.913	3.332	3.339
Jan-16	3.297			
Feb-16	3.048			
Mar-16	2.939			
Apr-16	3.133			
Jan.-Apr. 2016	3.104	3.091	3.272	3.297
May 2011-Apr.	2.945	2.890	3.966	4.442

MGD = million gallons per day

Table 4. Effluent Characterization Based on Form 2C Data

			Effluent						
	Units		Max daily		30 day max		Long term avg		No. of
Parameter	Conc	Mass	Conc	Mass	Conc	Mass	Conc	Mass	Analyses
Outfall 015									
Biological Oxygen Demand	mg/L	lb/day	3.2	--	--	--	--	--	1
Chemical Oxygen Demand	mg/L	lb/day	23	--	--	--	--	--	1
Total Organic Carbon	mg/L	lb/day	4.9	--	--	--	--	--	1
Total Suspended Solids	mg/L	lb/day	< 4.0	--	16	--	1.07	--	336
Ammonia	mg/L	lb/day	< 2.0	--	--	--	--	--	1
Flow	MGD	--	2.89		--		--		1,826
Temperature (Winter)	℃	--	21.15		--		--		1,825
Temperature (Summer)	℃	--	29.5		--		--		1,825
pH (minimum)	S.U.	--	7.08	--	--	--	--	--	1,825
pH (maximum)	S.U.	--	7.93	--	--	--	--	--	1,825
Bromide	mg/L	lb/day	< 0.50	--	--	--	--	--	1
Chlorine, Total Residual	mg/L	lb/day	ND	--	--	--	--	--	1
Fluoride	mg/L	lb/day	1.7	--	1.70	--	1.25	--	63
Nitrate+Nitrite	mg/L	lb/day	< 0.05	--	--	--	--	--	1
Total Organic Nitrogen	mg/L	lb/day	< 3.0	--	--	--	--	--	1
Oil & Grease	mg/L	lb/day	< 5.0	--	< 5.0	--	0.0	--	209
Phosphorus	mg/L	lb/day	0.14	--	--	--	--	--	1
Sulfate	mg/L	lb/day	240	--	--	--	--	--	1
Sulfide	mg/L	lb/day	< 3.0	--	--	--	--	--	1
Sulfite	mg/L	lb/day	< 5.0	--	--	--	--	--	1
Aluminum	µg/L	lb/day	250	--	--	--	--	--	1
Barium	µg/L	lb/day	< 200	--	--	--	--	--	1
Boron	µg/L	lb/day	< 200	--	--	--	--	--	1

Parameter	Units		Effluent						
			Max daily		30 day max		Long term avg		No. of
	Conc	Mass	Conc	Mass	Conc	Mass	Conc	Mass	Analyses
Cobalt	µg/L	lb/day	< 7.0	--	--	--	--	--	1
Iron	µg/L	lb/day	220	--	--	--	--	--	1
Magnesium	µg/L	lb/day	36,000	--	--	--	--	--	1
Molybdenum	µg/L	lb/day	94	--	--	--	--	--	1
Manganese	µg/L	lb/day	120	--	--	--	--	--	1
Tin	µg/L	lb/day	< 100	--	--	--	--	--	1
Titanium	µg/L	lb/day	< 50	--	--	--	--	--	1
Antimony	µg/L	lb/day	< 10	--	--	--	--	--	1
Arsenic	µg/L	lb/day	< 10	--	--	--	--	--	1
Beryllium	µg/L	lb/day	< 5.0	--	--	--	--	--	1
Cadmium	µg/L	lb/day	< 2.0	--	--	--	--	--	16
Chromium	µg/L	lb/day	7.8	--	7.8	--	0.86	--	20
Copper	µg/L	lb/day	25	--	25	--	1.47	--	20
Lead	µg/L	lb/day	21	--	21	--	2.99	--	20
Mercury	µg/L	lb/day	< 0.20	--	--	--	--	--	1
Nickel	µg/L	lb/day	43.7	--	43.7	--	5.64		1
Selenium	µg/L	lb/day	< 5	--	--	--	--	--	1
Silver	µg/L	lb/day	< 5	--	--	--	--	--	1
Thallium	µg/L	lb/day	< 10	--	--	--	--	--	1
Zinc	µg/L	lb/day	84.4	--	84.4	--	510	--	266
Cyanide	mg/L	lb/day	< 0.01	--	2.89	--	0.0	--	20
Phenols	mg/L	lb/day	< 0.04	--	--	--	--	--	1

Table 5. Effluent Characterization Using Self-Monitoring Data

Parameter	Season	Units	Current Permit Limits		# Obs.	Percentiles		Data Range
			30 day	Daily		50th	95th	
Outfall 015								
Water Temperature	Annual	°C	- - - - - Monitor - - - - -		1827	20.9	25.6	8.1-29.1
Total Dissolved Residue	Annual	mg/L	- - - - - Monitor - - - - -		63	940	1100	790-1100
Total Suspended Solids	Annual	mg/L	10	30	261	0	7	0-16
		kg/day	133	397	261	0	87.1	0-176
Oil and Grease	Annual	mg/L	--	10	53	0	0	0-2.3
		kg/day	79	133	261	0	0	0-0
Cyanide, Total	Annual	mg/L	- - - - - Monitor - - - - -		20	0	0	0-0
Fluoride, Total	Annual	mg/L	- - - - - Monitor - - - - -		63	1.2	1.69	0.13-1.8
Nickel, Total Recoverable	Annual	µg/L	178	485	21	0	0	0-34
		kg/day	2.35	6.41	21	0	0	0-0.36
Silver, Total Recoverable	Annual	µg/L	- - - - - Monitor - - - - -		20	0	0	0-0
Zinc, Total Recoverable	Annual	µg/L	229	426	261	77	230	0-510
		kg/day	3.03	5.64	261	0.811	2.87	0-6.76
Cadmium, Total Recoverable	Annual	µg/L	- - - - - Monitor - - - - -		20	0	0	0-0
Lead, Total Recoverable	Annual	µg/L	32	192	21	3	13	0-21
		kg/day	0.42	2.55	21	0.0318	0.231	0-0.27
Chromium, Total Recoverable	Annual	µg/L	122	337	21	0	6.8	0-7.8
		kg/day	1.61	4.46	21	0	0.0618	0-0.0768
Copper, Total Recoverable	Annual	µg/L	- - - - - Monitor - - - - -		20	0	1.25	0-25
Flow Rate	Annual	MGD	- - - - - Monitor - - - - -		1827	3	4.3	0-7
Acute Toxicity, *Ceriodaphnia dubia*	Annual	TU_a	- - - - - Monitor - - - - -		5	0	0	0-0
pH, Maximum	Annual	S.U.	--	9.0	1827	7.25	7.69	6.91-14
pH, Minimum*	Annual	S.U.	6.5 (minimum)		1827	7.05	7.37	6.62-7.7

All values are based on annual records unless otherwise indicated. * = For minimum pH, 5th percentile shown in place of 50th percentile

Table 6. Projected Effluent Quality

Parameter	Units	Number of Samples	Number > MDL	PEQ Average	PEQ Maximum
Aluminum	µg/L	1	1	1,131.5	1,550
Cadmium	µg/L	21	0	--	--
Chlorine, Total Residual	mg/L	1	0	--	--
Chromium	µg/L	22	2	7.4022	10.14
Copper [a]	µg/L	33	14	18.357	27.311
Cyanide, Free	mg/L	21	0	--	--
Dissolved Solids, total	mg/L	63	63	1,022.3	1,110.9
Fluoride	mg/L	64	63	1.314	1.8
Iron	µg/L	1	1	995.72	1,364
Lead	µg/L	22	11	13.733	24.056
Magnesium	mg/L	1	1	162.936	223.2
Manganese	µg/L	1	1	543.12	744
Mercury [b]	ng/L	2	1	2.69078	3.686
Molybdenum	µg/L	1	1	425.444	582.8
Nickel	µg/L	22	1	32.266	44.2
Selenium [a]	µg/L	14	1	36.135	49.5
Silver [a]	µg/L	33	1	0.9636	1.32
Sulfates	mg/L	1	1	1,086.24	1,488
Zinc	µg/L	261	239	173.7	254.73
Ammonia (Summer) [a]	mg/L	14	0	--	--
Ammonia (Winter)	mg/L	0	0	--	--

[a] From data collected in June 28 – July 11, 2016; see Attachment 5
[b] From data collected on June 8, 2011; this parameter was no longer required for monitoring
MDL = analytical method detection limit
PEQ = projected effluent quality

Table 7. Summary of Acute Toxicity Results

Date	*Ceriodaphnia Dubia* TU_a
9/21/2011	AA
9/10/2012	AA
9/16/2013	AA
9/16/2014	AA
9/15/2015	AA

AA = non-detection; analytical method detection limit of 0.2 TU_a
TU_a = acute toxicity unit

Table 8. Use Attainment Table

Location	Study Year	River Mile	Use	Status	Causes [a]	Sources[b]
Hurford Run at Canton, Near Mouth	2003	0.10	WWH	NON	Water temperature Ammonia pH Other[c]	Industrial point sources Channelization Urban runoff Agriculture Spills Septic systems Subsurface mining Municipal point sources
Nimishillen Creek at Canton @ Eighth St.	2005	14.17	WWH	PARTIAL	Nutrients Flow alteration	
Nimishillen Creek Upstream Sherrick Run @ Bauhof Park	2005	11.10	WWH	PARTIAL		

[a] Table 4-1 of the "Total Maximum Daily Loads for the Nimishillen Creek Watershed", 2009.
[b] Watershed Assessment Unit Summaries for the City of Canton-Middle Branch Nimishillen Creek and Sherrick Run-Nimishillen Creek, "2014 Integrated Water Quality Monitoring and Assessment Report"
[c] "Other" as a cause refers to not readily identified impacts associated with runoff from impervious surfaces and lawns in urban settings.
Note: Nimishillen Creek and Hurford Run confluence is at RM 11.56 of Nimishillen Creek
WWH = warmwater habitat

Table 9. Water Quality Criteria in the Study Area

Parameter	Units	Outside Mixing Zone Criteria				Inside Mixing Zone Maximum
		Average			Maximum	
		Human Health	Agri-culture	Aquatic Life	Aquatic Life	
Aluminum	µg/L	--	--	--	--	--
Cadmium	µg/L	--	50	7.3	22	43
Chlorine, Total Residual	mg/L	--	--	0.011	0.019	0.038
Chromium	µg/L	--	100	270	5,600	11,000
Copper	µg/L	1,300	500	30	52	100
Cyanide, Free	mg/L	220	--	0.012	0.046	0.092
Dissolved Solids, Total	mg/L	--	--	1,500	--	--
Fluoride	mg/L	--	2	--	--	--
Iron	µg/L	--	5,000	--	--	--
Lead	µg/L	--	100	37	710	1,400
Magnesium	mg/L	--	--	--	--	--
Manganese	µg/L	--	--	--	--	--
Mercury	ng/L	12	10,000	910	1,700	3,400
Molybdenum	µg/L	--	--	20,000	190,000	370,000
Nickel	µg/L	4,600	200	170	1,500	3,000
Selenium	µg/L	11,000	50	5	--	--
Silver	µg/L	--	--	1.3	17	35
Sulfates	mg/L	--	--	--	--	--
Zinc	µg/L	69,000	25,000	390	390	780
Ammonia (Summer)	mg/L	--	--	1.7	--	--

Table 10. Instream Conditions and Discharger Flow

Parameter	Units	Season	Value	Basis
Stream Flows				
1Q10	cfs	annual	0.036	USGS StreamStats at RM 0.08, Domer Ditch
7Q10	cfs	annual	0.047	USGS StreamStats at RM 0.08, Domer Ditch
		summer	-	
		winter	-	
30Q10	cfs	summer	0.075	USGS StreamStats at RM 0.08, Domer Ditch
		winter	-	
90Q10	cfs	annual	-	
Harmonic Mean	cfs	annual	0.41	USGS Streamstats at RM 0.08, Domer Ditch
Mixing Assumption	%	average	100	
		maximum	100	
Hardness, OMZ	mg/L	annual	400	Stations R07S62, R07W17;1998-2006; n=20; median
Hardness, IMZ	mg/L	annual	400	R07S62, R07W17;1998-2006; n=20; median
pH	S.U.	summer	7.52	Effluent Data; 5/11-4/16 n = 610
		winter	-	
Temperature	ºC	summer	23.7	Effluent Data; 5/11-4/16 n = 610
		winter	-	
TimkenSteel flow	cfs	annual	5.4153	Reported average
Background Water Quality				
Aluminum	µg/L		0	*; 2006-12; n=16; 16<MDL; No data above detection.
Cadmium	µg/L		0	*; 2006-12; n=16; 16<MDL; No data above detection.
Chlorine, Total Residual	mg/L		71.85	*; 2006-12; n=16; 0<MDL; half of DL
Chromium	µg/L		0	*; 2006-12; n=16; 16<MDL; No data above detection.
Copper	µg/L		0.5	*; 2006-12; n=16; 13<MDL; median
Cyanide, Free	mg/L		0	No representative data available.
Dissolved Solids	mg/L		445	*; 2006-12; n=16; 0<MDL; median
Fluoride	mg/L		0	No representative data available.
Iron	µg/L		446	*; 2006-12; n=16; 0<MDL; median
Lead	µg/L		0	*; 2006-12; n=16; 16<MDL; No data above detection.
Magnesium	mg/L		17.5	*; 2006-12; n=16; 0<MDL; median
Manganese	µg/L		172.5	*; 2006-12; n=16; 0<MDL; median
Mercury	ng/L		0	No representative data available.
Molybdenum	µg/L		0	No representative data available.
Nickel	µg/L		0.5	*; 2006-12; n=16; 11<MDL; median

Parameter	Units	Season	Value	Basis
Selenium	µg/L		0	*; 2006-12; n=16; 16<MDL; No data above detection.
Silver	µg/L		0	No representative data available.
Sulfates	mg/L		70.05	*; 2006-12; n=16; 0<MDL; median
Zinc	µg/L		2.5	*; 2006-12; n=16; 14<MDL; median
Ammonia (Summer)	mg/L		0.17	*; 2006-12; n=9; 2<MDL; mean

MDL = analytical method detection limit
ORSANCO = Ohio River Valley Sanitation Commission
USGS StreamStats (version 3.0) = United States Geological Survey StreamStats (web application)
WLA = wasteload allocation

* Background data was not available for this specific site. Instead, the WLA was calculated with background data from stations listed in Attachment 7.

Table 11. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria

Parameter	Units	Outside Mixing Zone Criteria				Inside Mixing Zone Maximum
		Average			Maximum	
		Human Health	Agri-culture	Aquatic Life	Aquatic Life	
Aluminum	µg/L	--	--	--	--	--
Cadmium	µg/L	--	54	7.4	22	43
Chlorine, Total Residual	mg/L	--	--	0.011	0.019	0.038
Chromium	µg/L	--	108	272	5,633	11,000
Copper	µg/L	1,398	538	30	52	100
Cyanide, Free	mg/L	237	--	0.012	0.046	0.092
Dissolved Solids	mg/L	--	--	1,508	--	--
Fluoride	mg/L	--	2.2	--	--	--
Iron	µg/L	--	5,345	--	--	--
Lead	µg/L	--	108	37	714	1,400
Magnesium	mg/L	--	--	--	--	--
Manganese	µg/L	--	--	--	--	--
Mercury	ng/L	12	10,000	910	1,700	3,400
Molybdenum	µg/L	--	--	20,152	191,105	370,000
Nickel	µg/L	4,948	215	171	1,509	3,000
Selenium	µg/L	11,833	54	5	--	--
Silver	µg/L	--	--	1.3	17	35
Sulfates	mg/L	--	--	--	--	--
Zinc	µg/L	74,224	26,893	393	392	780
Ammonia (Summer)	mg/L	--	--	1.72	--	--

Table 12. Parameter Assessment

Group 1: Due to a lack of criteria, the following parameters could not be evaluated at this time.

Aluminum	Magnesium	Manganese
Sulfates		

Group 2: PEQ < 25 percent of WQS or all data below minimum detection limit.
WLA not required. No limit recommended; monitoring optional.

Ammonia	Cadmium	Chlorine, Total Residual
Chromium	Cyanide, Free	Iron
Mercury	Molybdenum	Nickel

Group 3: PEQmax < 50 percent of maximum PEL and PEQavg < 50 percent of average PEL.
No limit recommended; monitoring optional.

Lead

Group 4: PEQmax >= 50 percent, but < 100 percent of the maximum PEL or
PEQavg >= 50 percent, but < 100 percent of the average PEL. Monitoring is appropriate.

Copper	Total Filterable Residue (dissolved solids)	
Fluoride	Silver	Zinc

Group 5: Maximum PEQ >= 100 percent of the maximum PEL or average PEQ >= 100 percent of the average PEL, or either the average or maximum PEQ is between 75 and 100 percent of the PEL and certain conditions that increase the risk to the environment are present. Limit recommended.

Limits to Protect Numeric Water Quality Criteria

		Recommended Effluent Limits	
Parameter	*Units*	*Average*	*Maximum*
Selenium	µg/L	5.0	--

PEL = preliminary effluent limit
PEQ = projected effluent quality
WLA = wasteload allocation
WQS = water quality standard

Table 13. Initial Effluent Limits for Outfall 015

Parameter	Units	Concentration		Loading (kg/day)[a]		Basis[b]
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Water Temperature	°C	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
pH	S.U.	6.5 - 9.0		--	--	WQS, ELG
Flow Rate	MGD	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
Total Suspended Solids	mg/L	10	30	133	397	AD
Oil and Grease	mg/L	--	10	31.8	133	AD, ELG
Phosphorus	mg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				BTJ
Fluoride	µg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				RP, WQS
Chromium	µg/L	108	319	1.43	4.23	WQS, ELG
Copper	µg/L	30	52	0.397	0.689	WQS
Lead	µg/L	32	161	0.42	2.13	AD, ELG
Nickel	µg/L	171	458.5	2.27	6.08	WQS, ELG
Selenium	µg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				RP
Silver	µg/L	27.6	49.5	0.366	0.656	RP, ELG
Zinc	µg/L	211	393	2.80	5.21	ELG, WQS
Total Toxic Organics	µg/L	--	245	--	3.25	ELG
Acute Toxicity *Ceriodaphnia dubia*	TU_a	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				WET

[a] Total Suspended Solids and Oil & Grease concentration limits shall remain the same because these pollutants were not allocated. Effluent loadings for all other parameters are based on a flow rate of 3.5 MGD.

[b] Definitions:
AD = Antidegradation Rule (OAC 3745-1-05)
BTJ = Best Technical Judgment
ELG = Federal Effluent Limitation Guidelines, see Attachments 2-3
M = BTJ of Permit Guidance 2: Determination of Sampling Frequency Formula for Industrial Waste Discharges
RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in permits (3745-33-07(A))
WET = Whole Effluent Toxicity (OAC 3745-33-07(B))
WQS = Ohio Water Quality Standards (OAC 3745-1)

[c] Monitoring of flow and other indicator parameters is specified to assist in the evaluation of effluent quality and treatment plant performance.

Table 14. Final Effluent Limits for Outfall 015

Parameter	Units	Concentration		Loading (kg/day)[a]		Basis[b]
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
Water Temperature	°C	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
pH	S.U.	6.5 - 9.0		--	--	WQS, ELG
Flow Rate	MGD	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				M[c]
Total Suspended Solids	mg/L	10	30	133	397	AD, BTJ
Oil and Grease	mg/L	--	10	31.8	133	ELG, WQS
Phosphorus	mg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				BTJ
Fluoride	µg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				RP, WQS
Chromium	µg/L	108	319	1.43	4.23	WQS, ELG
Copper	µg/L	30	52	0.397	0.689	RP, WQS
Lead	µg/L	32.0	161	0.42	2.13	AD, ELG
Nickel	µg/L	171	459	2.27	6.08	WQS, ELG
Selenium	µg/L	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				RP
Silver	µg/L	1.3	17	0.017	0.226	RP, WQS
Zinc	µg/L	211	393	2.80	5.21	ELG, WQS
Total Toxic Organics	µg/L	--	245	--	3.25	ELG
Acute Toxicity *Ceriodaphnia dubia*	TU_a	- - - - - - - - - - - - Monitor - - - - - - - - - - - -				WET

[a] Total Suspended Solids and Oil & Grease concentration limits shall remain the same because these pollutants are not allocated. Effluent loadings for all other parameters are based on a flow rate of 4.0 MGD.

[b] Definitions:
AD = Antidegradation Rule (OAC 3745-1-05)
BTJ = Best Technical Judgment
ELG = Federal Effluent Limitation Guidelines, see Attachments 2-3
M = BTJ of Permit Guidance 2: Determination of Sampling Frequency Formula for Industrial Waste Discharges
RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in permits (3745-33-07(A))
WET = Whole Effluent Toxicity (OAC 3745-33-07(B))
WQS = Ohio Water Quality Standards (OAC 3745-1)
WLA = Wasteload Allocation Procedures (OAC 3745-2)

[c] Monitoring of flow and other indicator parameters is specified to assist in the evaluation of effluent quality and treatment plant performance.

Attachment 1. Production Rates

	Annual Production (tons/year)							Daily Average [a] (tons/day)
	2010	2011	2012	2013	2014	2015	Maximum in Most Recent Three Years	
Harrison Steel Plant								
Tap	554,370	679,505	495,082	462,233	584,503	464,373	584,503	2,248.09
Vacuum Degassing	506,226	614,719	462,210	435,073	547,740	394,695	547,740	2,106.69
Ingot	3,552	3,764	3,853	1,624	3,338	1,819	3,338	12.84
Continuous Caster	502,674	610,955	458,357	433,449	544,402	392,876	544,402	2,093.85
Billet Mill	112,261	157,379	92,292	76,899	103,382	-	103,382	397.62
Bar Mill	465,126	564,862	498,209	458,596	555,791	546,867	555,791	2,137.66
Faircrest Steel Plant								
Tap	919,227	1,065,602	842,345	726,396	931,085	570,077	931,085	3,581.10
Vacuum Degassing	873,761	1,016,588	807,642	698,233	889,412	549,973	889,412	3,420.82
Ingot	873,761	1,016,588	807,642	698,233	879,220	426,353	879,220	3,381.62
Continuous Caster	-	-	-	-	10,192 [b]	123,620	1,300,000 [c]	2,664.00
Bloom Mill	787,965	931,118	725,528	613,692	771,778	478,510	771,778	2,968.38
Billet Mill	563,943	655,454	483,042	439,184	556,623	459,732	556,623	2,140.86
Gambrinus Steel Plant								
Hot Forming (piercing)	280,163	354,448	270,271	241,657	271,835	173,669	271,835	1,045.52
Cold Forming (cold draw)	16,079	19,080	19,803	5,772	5,020	3,954	5,772	22.20
Water Blasted	-	-	934	6,107	69,343	44,560	69,343	266.70
Thermal Quenching	76,695	94,260	84,323	76,268	105,454	38,058	105,454	405.59
Zinc Phosphating [d]	13,920	16,987	17,102	5,281	4,260	3,417	5,281	20.31
Acid Pickling [d]	201,458	286,513	232,837	151,034	36,511	844	151,034	580.90

[a] Assume 5 work days per week; 260 days per year

[b] The caster began production towards the end of 2014.

[c] Based on the assumption that the caster produces at full capacity (1.3 million tons/year). Due to a decline in the oil and gas industry, production data from 2014 and 2015 are not representative years for the production of this process. An increase in production is expected within the permit cycle.

[d] Wastewater from these processes are hauled to another facility and do not discharge through Outfall 015; no longer relevant to effluent limitation guideline calculations.

Attachment 2. Applicable Federal Effluent Limitation Guidelines

40 CFR 420 – Iron and Steel Manufacturing Point Source Category

Subpart E, Vacuum Degassing Subcategory

40 CFR 420.52 – Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).

	Loading Limits (kg/1,000 kg of product)	
Parameter	*Daily Maximum*	*30-day Average*
TSS	0.0156	0.00521
pH	6.0 – 9.0 S.U.	

Subpart E, Vacuum Degassing Subcategory

40 CFR 420.54 – New Source Performance Standards (NSPS)

	Loading Limits (kg/1,000 kg of product)	
Parameter	*Daily Maximum*	*30-day Average*
Total Suspended Solids	0.00730	0.00261
Lead	0.0000939	0.0000313
Zinc	0.000141	0.0000469
pH	6.0 – 9.0 S.U.	

Subpart F, Continuous Casting Subcategory

40 CFR 420.62 – Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT)

	Loading Limits (kg/1,000 kg of product)	
Parameter	*Daily Maximum*	*30-day Average*
TSS	0.0780	0.0260
Oil & Grease	0.0234	0.0078
pH	6.0 – 9.0 S.U.	

Subpart F, Continuous Casting Subcategory
40 CFR 420.64 – New Source Performance Standards (NSPS)

	Loading Limits (kg/1,000 kg of product)	
Parameter	*Daily Maximum*	*30-day Average*
Total Suspended Solids	0.00730	0.00261
Oil and Grease	0.00313	0.00104
Lead	0.0000939	0.0000313
Zinc	0.000141	0.0000469
pH	6.0 – 9.0 S.U.	

Subpart G, Hot Forming Subcategory
40 CFR 420.72(b)(1) - Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT), Section mills, Carbon.

	Loading Limits (kg/1,000 kg of product)	
Parameter	*Daily Maximum*	*30-day Average*
TSS	0.357	0.134
O&G	0.0894	--
pH	6.0 – 9.0 S.U.	

Subpart G, Hot Forming Subcategory
40 CFR 420.72(b)(2) - Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT), Section Mills, Specialty

	Loading Limits (kg/1,000 kg of product)	
Parameter	*Daily Maximum*	*30-day Average*
TSS	0.224	0.0841
O&G	0.0561	--
pH	6.0 – 9.0 S.U.	

Subpart G, Hot Forming Subcategory

40 CFR 420.72(d) – Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT)

	Loading Limits (kg/1,000 kg of product)	
Parameter	*Daily Maximum*	*30-day Average*
Total Suspended Solids	0.212	0.0795
Oil and Grease	0.053	--
pH	6.0 – 9.0 S.U.	

Subpart G, Hot Forming Subcategory

40 CFR 420.74(a)(2) – New source performance standards (NSPS)

	Loading Limits (kg/1,000 kg of product)	
Parameter	*Daily Maximum*	*30-day Average*
Total Suspended Solids	0.0234	0.00876
Oil and Grease	0.00584	--
pH	6.0 – 9.0 S.U.	

Subpart G, Hot Forming Subcategory

40 CFR 420.74(b)(1) – New Source Performance Standards, Section Mills, Carbon

	Loading Limits (kg/1,000 kg of product)	
Parameter	*Daily Maximum*	*30-day Average*
Total Suspended Solids	0.0217	0.00813
Oil and Grease	0.00542	--
pH	6.0 – 9.0 S.U.	

Subpart J, Cold Forming Subcategory

Cold Drawing (40 CFR 420.102(b)(1)) – Effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT), Cold worked pipe and tube mills, Using water

	Loading Limits (kg/1,000 kg of product)	
Parameter	*Daily Maximum*	*30-day Average*
TSS	0.00125	0.000626
O&G	0.000522	0.000209
Chromium	0.0000209	0.0000084
Lead	0.0000094	0.0000031
Nickel	0.0000188	0.0000063
Zinc	0.0000063	0.0000021
pH	6.0 – 9.0 S.U.	

Subpart K, Alkaline Cleaning Subcategory

40 CFR 420.112(a) – Effluent limitations representing the degree of effluent reduction available by the application of the best practicable control technology currently available (BPT), Batch

	Loading Limits (kg/1,000 kg of product)	
Parameter	*Daily Maximum*	*30-day Average*
Total Suspended Solids	0.0730	0.0313
Oil & Grease	0.0313	0.0104
pH	6.0 – 9.0 S.U.	

Subpart M, Other Operations Subcategory

40 CFR 420.134(b) – New Source Performance Standards (NSPS), Forging operations

	Loading Limits (kg/1,000 kg of product)	
Parameter	*Daily Maximum*	*30-day Average*
Total Suspended Solids	0.0123	0.00508
Oil & Grease	0.00746	0.00446
pH	6.0 – 9.0 S.U.	

40 CFR 433 – Metal Finishing Point Source Category

Subpart A, Metal Finishing Subcategory

40 CFR 433.14 – Effluent limitations representing the degree of effluent reduction attainable by applying the best available technology economically achievable (BAT).

	Loading Limits (mg/L)	
Parameter	*Daily Maximum*	*30-day Average*
Cadmium (T)	0.69	0.26
Chromium (T)	2.77	1.71
Copper (T)	3.38	2.07
Lead (T)	0.69	0.43
Nickel (T)	3.98	2.38
Silver (T)	0.43	0.24
Zinc (T)	2.61	1.48
Cyanide (T)	1.20	0.65
TTO	2.13	--

Attachment 3. Calculation of Loading Limits for Outfall 015 Using Federal Effluent Guidelines

Process Wastewater

TimkenSteel Corporation's Faircrest, Gambrinus, and Harrison Steel plants are subject to the federal Effluent Limitation Guidelines (ELG) found in 40 CFR Parts 420.52, 420.53, 420.62, 420.63, 420.64, 420.134, 420.74,(a)(1), 420.74(b)(1), 420.102(a)(1), and 433.14. These limits are based on the production rate of the operations. More details can be found in Attachment 2.

The production and applicable FEG of each operation at each plant is summarized in the tables below:

Harrison Steel Plant		
Operation	Federal Effluent Guidelines	Average Production (kkg/day)
Vacuum Degassing	420.54, 420.53	1,911
Continuous Casting	420.62, 420.63	1,900
Hot Forming (Billet Mill)	420.72(a)(1)	360.7
Hot Forming (Horizontal-Vertical Mill)	420.72(b)(1), 420.72(b)(2)	1,939
Hot Forming (Precision Sizing Mill)	420.72(b)(1), 420.72(b)(2)	1,939

Faircrest Steel Plant		
Operation	Federal Effluent Guidelines	Average Production (kkg/day)
Vacuum Degassing	420.54	3,103
Continuous Casting	420.64	4,535.9
Hot Forming (Primary Mill)	420.74(a)(2)	2,693
Hot Forming (Secondary Mill)	420.74(b)(1), 420.74)(b)(2)	1,942
Forging	420.134(b)	2,693

Gambrinus Steel Plant		
Operation	Federal Effluent Guidelines	Average Production (kkg/day)
Hot Forming (Pipe & Tube Mills)	420.72(d)	948.5
Cold Drawing	420.72(a)(1), 420.112(a)	20.14
Operation	Federal Effluent Guidelines	Flow Rate (L/day)
Thermal Quench	433.14	1,526,278.031

Loading Limits at Outfall 015

The loading limit based on each Iron and Steelmaking ELG is:

$$Loading\ \left(\frac{kg}{day}\right) = ELG\ \left(\frac{lb}{1{,}000\ lbs}\right) * Production\ \left(\frac{tons}{day}\right) * \frac{2{,}000\ lbs}{ton} * \frac{1\ kg}{2.2\ lbs}.$$

The loading limit of each parameter can be calculated using the information from Attachment 2. An example of the calculation of the daily maximum allowable loading from Harrison Steel Plant's vacuum degassing for lead is as follows:

$$Lead\ Loading = 0.0000939\ \left(\frac{lb}{1{,}000\ lbs}\right) *\ 1{,}911\ \left(\frac{tons}{day}\right) * \frac{2{,}000\ lbs}{ton} * \frac{1\ kg}{2.2\ lbs} =\ 0.1795\ \frac{kg}{day}$$

The loading limit based on the Metal Finishing ELG is:

$$Loading\ \left(\frac{kg}{day}\right) = ELG\left(\frac{mg}{L}\right) * Flow\ \left(\frac{L}{day}\right) * \frac{1\ kg}{10^6\ mg}$$

The loading limit of each parameter can be calculated using the information from Attachment 2. An example of the calculation of the daily maximum allowable loading from Gambrinus Steel Plant's quenching operation for lead is as follows:

$$Loading\ \left(\frac{kg}{day}\right) = 0.69\left(\frac{mg}{L}\right) *\ 1{,}526{,}278\ \left(\frac{L}{day}\right) * \frac{1\ kg}{10^6\ mg} =\ 1.0531\frac{kg}{day}$$

Loadings for total suspended solids, oil and grease, lead, and zinc in each plant are listed below.

Harrison Steel Plant Loading Limits (kg/day)								
Operation	TSS		Oil & Grease		Lead		Zinc	
	Daily Max	30-Day Avg.	Daily Max	30-Day Avg.	Daily Max	30-Day Avg.	Daily Max	30-Day Avg.
Vacuum Degassing	29.81	9.957	--	--	0.180	0.060	0.269	0.090
Continuous Casting	148.2	49.39	44.45	14.82	0.178	0.059	0.268	0.089
Hot Forming (Billet Mills)	54.11	20.24	13.49	--	--	--	--	--
Hot Forming (H-V Mill, carbon)	311.5	116.9	78.02	--	--	--	--	--
Hot Forming (H-V Mill, specialty)	238.9	89.70	59.84	--	--	--	--	--
Hot Forming (PSM, carbon)	311.5	116.9	78.02	--	--	--	--	--
Hot Forming (PSM, specialty)	238.9	89.70	59.84	--	--	--	--	--
Total	1,333	492.9	333.6	14.82	0.358	0.119	0.537	0.179

Faircrest Steel Plant Loading Limits (kg/day)								
Operation	TSS		Oil & Grease		Lead		Zinc	
	Daily Max	30-Day Avg.	Daily Max	30-Day Avg.	Daily Max	30-Day Avg.	Daily Max	30-Day Avg.
Vacuum Degassing	22.65	8.100	--	--	0.291	0.097	0.438	0.146
Continuous Casting	33.11	11.84	14.20	4.717	0.476	0.142	0.640	0.213
Hot Forming (Primary Mill)	63.01	23.59	15.73	--	--	--	--	--
Hot Forming (Secondary Mill, carbon)	16.22	6.069	4.049	--	--	--	--	--
Hot Forming (specialty)	31.61	11.84	7.895	--	--	--	--	--
Forging	33.12	13.68	20.09	12.01	--	--	--	--
Total	199.7	75.12	61.96	16.73	0.717	0.239	1.077	0.358

Gambrinus Steel Plant Loading Limits (kg/day)								
Hot Forming, Water Blast, Alkaline Cleaning, and Quench	TSS		Oil & Grease		Lead		Zinc	
	Max	Avg	Max	Avg	Max	Avg	Max	Avg
	202.6	76.05	50.91	0.214	1.053	0.656	3.984	2.259
	Cadmium		Chromium		Copper		Nickel	
	Max	Avg	Max	Avg	Max	Avg	Max	Avg
	1.053	0.397	4.228	2.610	5.159	3.159	6.075	3.633
	Silver		Cyanide		TTO			
	Max	Avg	Max	Avg	Max	Avg		
	0.656	0.366	1.832	0.992	0.245	--		

Outfall 015 Loading Limits (kg/day)							
TSS		Oil & Grease		Lead		Zinc	
Daily Max	30-Day Avg.	Daily Max	30-Day Avg.	Daily Max	30-Day Avg.	Daily Max	30-Day Avg.
1,735	644.0	446.5	31.76	2.128	1.015	5.598	2.796
Cadmium		Chromium		Copper		Nickel	
Daily Max	30-Day Avg.	Daily Max	30-Day Avg.	Daily Max	30-Day Avg.	Daily Max	30-Day Avg.
1.053	0.397	4.228	2.610	5.159	3.159	6.075	3.633
Silver		Cyanide		TTO			
Daily Max	30-Day Avg.	Daily Max	30-Day Avg.	Daily Max.	30-Day Avg.		
0.656	0.366	1.832	0.992	0.245 mg/L (3.251 kg/day)	--		

Attachment 4. Implementation of Limits

	WQS				ELG				Anti-Backsliding/Antidegradation Previous Permit (3ID00021*LD)			
	Concentration (µg/L)		Load (kg/day)		Concentration (µg/L)		Load (kg/day)		Concentration (µg/L)		Load (kg/day)	
Pollutant	30-day Avg.	Daily Max.	30-day Avg.	Daily Max.	30-day Avg.	Daily Max.	30-day Avg.	Daily Max.	30-day Avg.	Daily Max.	30-day Avg.	Daily Max.
TSS	10,000	30,000	132.5	397.5	48,607	130,954	644.0	1,735	**10,000**	**30,000**	**133**	**397**
Oil and Grease [a]	--	10,000	--	132.5	2,397	33,203	**31.76**	433.66	5,963	**10,000**	79	**133**
Cadmium [b]	**7.4**	**22**	**0.098**	**0.291**	30.12	79.48	0.399	1.053	--	--	--	--
Chromium	**108**	5,633	**1.431**	74.63	197.0	**319.1**	2.61	**4.228**	122	337	1.61	4.46
Copper	**30**	**52**	**0.397**	**0.689**	238.4	389.4	3.159	5.159	--	--	--	--
Cyanide [b]	**12**	**46**	**0.159**	**0.609**	74.87	138.3	0.992	1.832	--	--	--	--
Lead	37	714	0.490	9.460	76.61	**160.6**	1.015	**2.128**	**32.0**	192	**0.42**	2.55
Nickel	**171**	1,509	**2.266**	19.99	274.1	**458.5**	3.632	**6.075**	178	485	2.35	6.41
Selenium	**5**	--	**0.066**	--	--	--	--	--	--	--	--	--
Silver	**1.3**	**17**	**0.017**	**0.225**	27.62 [c]	49.54 [c]	0.366 [c]	0.6563 [c]	--	--	--	--
Zinc	393	**393**	5.207	**5.207**	**211.0**	422.5	**2.796**	5.598	229	426	3.03	5.64
TTO	--	--	--	--	--	**245.4**	--	**3.25**	--	260	--	3.43

Values in **bold** will be in effect in the renewed permit as final limits.

[a] Concentration limits for this parameter shall stay the same based on OAC 3745-33-05(C)(3)(d) and because these limits are not a result of the wasteload allocation process described in OAC 3745-2.

[b] Ohio EPA has granted a monitoring waiver for this pollutant under 40 CFR 122.44(a)(2). Limits are still applicable.

[c] These limits shall be in effect in the initial monitoring requirements.

Attachment 5. TimkenSteel Additional Monitoring

TimkenSteel Supplemental Information for NPDES Permit 3ID00021*LD Renewal

	Parameters			
Date	Silver RL (1.0 ug/l) (ug/l)	Copper RL (2.0 ug/l) (ug/l)	Selenium RL (5.0 ug/l) (ug/l)	Ammonia RL (0.02 ug/l) (ug/l)
6/29/2016	ND	4.1	ND	ND
6/30/2016	ND	3.1	ND	ND
7/1/2016	ND	3.4	ND	ND
7/2/2016	ND	3.2	ND	ND
7/3/2016	ND	3	ND	ND
7/4/2016	ND	4.6	ND	ND
7/5/2016	ND	2.7	ND	ND
7/6/2016	ND	3.4	ND	ND
7/7/2016	ND	5.5	ND	ND
7/8/2016	ND	8	ND	ND
7/9/2016	ND	11	ND	ND
7/10/2016	ND	15	ND	ND
7/11/2106	1.1	18	33	ND

ND = Not Detected

Attachment 6. List of Approved Cooling Water Additives

Chemical	Discharge (mg/L)	Plant	Location	Use
Flogard MS6206	0.018	FSP	Caster Machine Cooling Water	Corrosion Inhibitor
Sodium Hypochlorite	0.000025	HSP	Mold Cooling Tower	Oxidize Biocide
Gengard GN8143	0.0063	HSP	Mold Cooling Tower	Corrosion Inhibitor
Solus AP24	0.001	FSP	Boilerhouse	Boiler deposit control treatment
Kleen MCT405	0.0014	FSP	Caster Reverse Osmosis	Alkaline membrane cleaner
Kleen MCT882	0.088	FSP	Caster Reverse Osmosis	Low pH membrane cleaner
BetzDearborn DCL30	0.0001	FSP	Caster mold water RO system	Dechlorination
Sodium Hypochlorite	0.000025	FSP	Contact Water system	Oxidizer
Hypochloric Acid	3E-10	FSP	Caster Ultrafilter & RO System	Cleanser
Hypersperse MDC714	0.0001	FSP	Caster mold water RO system	Antiscalant
Sodium Hydroxide	4E-10	FSP	Caster mold water RO system	Cleanser
BetzDearborn DCL30	0.0049	FSP	Caster machine water RO unit	Dechlorination
Hypersperse MDC714	0.0024	FSP	Caster machine water RO unit	Membrane deposit control agent
Gengard GN7210	0.035	FSP	Caster machine cooling system	Corrosion Inhibitor
Corrshield NT4201	0.0022	FSP	Caster Mold Cooling system	Corrosion Inhibitor
Spectrus NX1102	0.023	FSP	Caster Mold Cooling system	Microbial control agent
Gengard GN8020	0.018	FSP	Caster machine cooling system	Corrosion Inhibitor
Spectrus NX1102	0.0013	FSP	Caster Mold Cooling system	Biocide
Flogard MS6201	0.00095	FSP	Caster Contact Cooling System	Corrosion Inhibitor
AS-3030	< 0.02	WWTP	Splitter box	Coagulant aid
Depositrol SF5101E	0.1179	HSP	Caster cooling tower	Corrosion Inhibitor
Depositrol 5400	0.0236	HSP	Caster cooling tower	Corrosion Inhibitor
Gengard GN8240	0.155	HSP	Rolling Mill Furnace	Corrosion Inhibitor
Gengard GN7004	0.0071	WWTP	Air compressor cooling system	Corrosion Inhibitor
Depositrol BL6502	0.01	FSP	Roll Mill Scarfer boiling water	Dispersant
Gengard GN8113	0.00358	GSP	RFP cooling tower	Corrosion Inhibitor
Gengard GN8020	0.00358	GSP	ITTF Quench Pit cooling water	Scale Inhibitor

Chemical	Discharge (mg/L)	Plant	Location	Use
Depositrol BL6502	0.1429	GSP	Continuous Thermal Treat Cooling	Corrosion and Scale Inhibitor
Gengard GN8113	0.1745	HSP	Caster EMS cooling tower	Corrosion and Scale Inhibitor
Gengard GN8020	0.511	HSP	Reclaim cooling water system	Corrosion and Scale Inhibitor
Flogard MS6205	0.3406	HSP	Reclaim cooling water system	Corrosion Inhibitor
Depositrol SF101E	0.1179	HSP	Caster cooling tower	O&G Dispersant
Gengard 7004	0.3439	FSP	EAF cooling system	Dispersant
Gengard GN8020	0.0794	HSP	Spray Water	Dispersant
Steamate NA2160	0.0051	FSP	Boilerhouse	Neutralizing amine
Continuum AT3246	0.2135	GSP	QTF Cooling Towers	Corrosion and Scale Inhibitor
Depositrol SF5101E	0.0838	FSP	Billet Mill Cooling	O&G Dispersant
Flogard MS6201	0.14	GSP	Continuous Thermal Treat Cooling	Corrosion Inhibitor
Flogard MS6201	0.092	HSP	Rolling Mill Small Billet Mill Cooling Bed	Corrosion Inhibitor
BTA 680	1.3			
BOL 600	1			
BAN 8672	0.25			
Gengard GN8005	1.41	HSP	Substation	Inhibit and disperse scaling
Kleen AC9507	1.45	HSP	Spray System	Chemical Cleaning
Optisperse AP0520	0.028	GNW, GSP	Steel Boiler Feedwater	Condensate and Polymer treatment
Cortrol OS5300	0.002	GNS, GSP		Oxygen Scavenger and acid neutralizer
GE Aquamax IEC2	0.145		Boiler Systems	Clean resisn
Steamate NA0560	0.07	HSP/GNW	Steam Plants	Condensate Treatment
Gengard GN8005	1.42	HSP	Substation	Scale Inhibitor / Dispersant
Flogard POT803	0.017		Chilled Water Building	Corrosion Inhibitor
Continuum AEC3107	1.08	HSP	Spray System	Scale inhibitor
Flogard MS6201	0.034	HSP	Substation	Corrosion Inhibitor
Continuum AEC3136	0.18	GSP	QTF Quench & Bundle towers	Corrosion and Scale Inhibitor
Dianodic DN2471	0.14	GSP	QTF Quench & Bundle towers	Corrosion and Scale Inhibitor

Chemical	Discharge (mg/L)	Plant	Location	Use
Scaletrol PDC9313	0.017	HSP	Reclaim cooling water system	Deposit control agent
Klaraid IC1172	0.4		Caster Tower	Coagulant
Foamtrol AF3561	0.3	WWTP	WWTP	Prevention of foam
Optisperse AP0200	0.12	FSP	Boilerhouse	boiler treatment to prevent scales
Dissolvine E-39	1.9	FSP	RO Unit @ Boilerhouse	Chelating Agent
Muriatic acid		FSP	RO Unit @ Boilerhouse	Chemical processing and metal cleaning
Sodium Hydroxide		FSP	RO Unit @ Boilerhouse	pH adjustment
PermaTreat PC-191	0.18	FSP	RO Unit @ Boilerhouse	Reverse Osmosis Antiscalant
SF502	0.11		Cooling Tower	
Continuum AEC3107	0.043	GSP	Quench System	Dispersant
Continuum AEC3136	0.167	GSP	Induction Heater Cooling System	Corrosion Inhibitor
Dianodic DN2471	0.183	GSP	Induction Heater Cooling System	Corrosion Inhibitor
Flogard MS6201	0.006	GSP	Quench System	Corrosion Inhibitor
Inhibitor AZ8104	0.022	GSP	Quench System	Corrosion Inhibitor
Depositrol BL5302	0.087	FSP	Rolling Mill Scarfer	Control Deposits
Bleach		GSP	Induction Heating/Cooling Water system	Control Microbial Growth
Scale-Trol PDC9335	0.03			Scale Inhibitor

FSP = Faircrest Steel Plant
GSP = Gambrinus Steel Plant
HSP = Harrison Steel Plant
ITTF = Intermediate Thermal Treatment Facility
RO = Reverse Osmosis
WWTP = Wastewater Treatment Plant

Attachment 7. List of Stations for Background Data

Station #	Location	River Mile	Drainage Area (mi^2)	Use Designation	Attainment Status
302089	McDowell Ditch Upstm. Glenwood St at Price Park	3.12	11.7	Modified Warmwater Habitat	Unknown (Full at RM 1.9)
302090	W. Branch Nimishillen Creek at Bridge Park	5.3	18.6	Warmwater Habitat	Unknown (Non between RM 4.5-9.3)
302091	McDowell Ditch at 38th Street	0.48	18.7	Modified Warmwater Habitat	Unknown (full attainment RM 1.9)
R07G02	Middle Branch Nimishillen Creek North of Louisville at State Route 44	13.64	4.1	Modified Warmwater Habitat	Unknown (RM 14.17 = partial) (RM 10.4 = non)
R07P01	Sherrick Run at Allen Road	0.10	10.4	Warmwater Habitat	Non-Attainment
R07S53	E. Branch Nimishillen Creek at Louisville at State Route 153	6.36	18.9	Warmwater Habitat	Partial Attainment
R07S55	Tributary to E.Branch Nimishillen Creek (RM 2.75) at mouth	0.03	3.9	Warmwater Habitat	Unknown
R07W23	Tributary to E. Branch Nimishillen Creek (RM 4.67) South of Louisville at State Routh Railroad	0.22	9.5	Warmwater Habitat	Non-Attainment