National Pollutant Discharge Elimination System (NPDES) Permit Program

# F A C T  S H E E T

Regarding an NPDES Permit to Discharge to Waters of the State of Ohio
for **Marathon Petroleum Company LLC**

Public Notice No.: 11-04-058
Public Notice Date: April 25, 2011
Comment Period Ends: May 25, 2011

OEPA Permit No.: **3IG00000*LD**
Application No.: **OH0005657**

Name and Address of Applicant:

**Marathon Petroleum Company LLC**
**P.O. Box 8170**
**Canton, Ohio 44711**

Name and Address of Facility Where Discharge Occurs:

**Marathon Petroleum Company**
**2408 Gambrinus Avenue SW**
**Canton, Ohio 44706**
**Stark County**

Receiving Water: **Hurford Run or Tuscarawas River**

Subsequent Stream Network: **Muskingum River to Ohio River**

## Introduction

Development of a Fact Sheet for NPDES permits is mandated by Title 40 of the Code of Federal Regulations, 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, 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 and Ohio Water Pollution Control Law (ORC 6111). Decisions to award variances to Water Quality Standards or promulgated effluent guidelines for economic or technological reasons will also be justified in the Fact Sheet where necessary.

Effluent limits based on available treatment technologies are required by Section 301(b) of the Clean Water Act. Many of these have already been established by 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 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 wasteload allocation for a pollutant to a measure of the effluent quality. The measure of effluent quality is called PEQ - Projected Effluent Quality. 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**

Limits for BOD, COD, suspended solids, pH, ammonia (summer 30-day), fluoride, sulfide, phenolics, chromium and hexavalent chromium are proposed to continue from the current permit. These limits are more restrictive than BCT/BAT values and water quality-based limits.

The draft permit contains water quality-based limits for ammonia (daily maximum) and ammonia (winter 30-day). Limits for ammonia are needed because ammonia is an effluent guideline parameter, and all effluent guideline parameters must have permit limits. The water quality-based limits are more restrictive than BAT; therefore the permit must include the WQBELs to ensure that permit authorizations meet WQS.

For the Hurford Run discharge, new water-quality-based limits are needed for chlorine, selenium and dissolved solids because effluent data shows that these parameters have the reasonable potential to contribute to exceedances of WQS.

The limits for coliform bacteria have been revised to comply with new water quality standards that went into effect on March 15, 2010. The e. coliform limits would be 126 per 100 milliliters (30-day) and 284 per 100 ml (daily maximum) for the Tuscarawas River discharge and 161 per 100 milliliters (30-day) and 362 per 100 ml (daily maximum) for the Hurford Run discharge.

## Table of Contents



### List of Figures



### List of Tables

## Table of Contents (continued)

**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 and Compliance Section**
**P.O. Box 1049**
**Columbus, Ohio 43216-1049**

The OEPA 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 Phil Rhodes at (330) 963-1136 (phil.rhodes@epa.ohio.gov) or Eric Nygaard at (614) 644-2024 (eric.nygaard@epa.ohio.gov).

**Location of Discharge/Receiving Water Use Classification**

The Marathon Petroleum Canton Refinery discharges to Hurford Run via Outfall 001 at River Mile (RM) 1.91. The facility also discharges storm water from non-process areas to Hurford Run via Outfall 002. The approximate location of the facility is shown in Figure 1.

Hurford Run is described by Ohio EPA River Code: 17-468, U.S. EPA River Reach #: 05040001-028, County: Stark, Ecoregion: Erie-Ontario Lake Plain. Aquatic life uses for Hurford Run vary by location (OAC 3745-1-24). From the headwaters to RM 1.71, Hurford Run is designated Limited Resource Water (LRW); from RM 1.71 to RM 0.8, Hurford Run is designated Modified Warmwater Habitat (MWH); from RM 0.8 to the mouth the use is Warmwater Habitat (WWH). For recreational uses, Hurford Run is designated for Secondary Contact Recreation (SCR) from the headwaters to RM 1.71, and Primary Contact Recreation (PCR – Class B) for the segment downstream from RM 1.71. Other uses under Ohio's Water Quality Standards for the entire stream segment are: Agricultural Water Supply (AWS), and Industrial Water Supply (IWS).

Marathon Petroleum is also authorized to discharge its treated wastewater to the Tuscarawas River at RM79,98 (designated Outfall 003 in the current permit). This alternative was added to the permit in a 2009 modification so that the discharge would have more in-stream capacity to assimilate the total dissolved solids of the discharge. Marathon has not yet used this discharge point for the plant wastewater.

The Tuscarawas River is designated for the following uses under Ohio's Water Quality Standards (OAC 3745-1-24): Warmwater Habitat (WWH), Agricultural Water Supply (AWS), Industrial Water Supply (IWS), and Primary Contact Recreation (PCR-Class A).

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 water quality standards 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 Clean Water Act. Ohio WQS also include aquatic life use designations for waterbodies which can not meet the Clean Water Act goals because of human-caused conditions that can not 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) and wading only (Secondary Contact - 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 and industrial water supply.

**Facility Description**

The Marathon Petroleum Canton Refinery was built in 1931 and employs cracking technology to process foreign and domestic crude oil into petroleum products. Process operations include crude oil desalting, atmospheric distillation, vacuum distillation, fluid catalytic cracking, hydrotreating, catalytic reforming, asphalt production and asphaltic oxidation. Refined products include gasoline, diesel fuel, heating oil, kerosene and asphalt.

Marathon's processes generate wastewaters which are regulated by the federal effluent guidelines listed in 40 CFR Part 419, Petroleum Refining Point Source Category. The process operations at this facility are also defined by the standard industrial classification (SIC) category 2911 – Petroleum Refining.

**Description of Existing Discharge**

The Marathon Petroleum Canton Refinery currently has two external outfalls. Outfall 001 discharges to Hurford Run and includes process wastewater from the refining operations, process and non-process area storm water runoff, non-contact cooling water and boiler blowdown (See Table 1). This discharge may also be routed to the Tuscarawas River when the pipeline to that point is completed; the discharge is referred to as Outfall 003 in the permit if it is discharged to the Tuscarawas River.

Process wastewater results from: 1) the desalting process in which salts and minerals are removed from crude oil, and 2) the foul water stripping process which removes light hydrocarbons, hydrogen sulfide and ammonia. The wastewater treatment units at the Canton Refinery include oil/water separation, pH adjustment and polymer addition. Hydrocarbons are removed with dissolved air flotation units. Wastewater is then aerated using an activated sludge process, and solids removed by clarification. The water from this system is treated by polymer addition followed by filtration in dual media filters for final solids removal and then flows to activated carbon columns to remove residual hydrocarbons.

The current permit contains Outfall 002, which is storm water from non-process areas. This outfall is now included in the general storm water permit authorization for this facility, and would be removed from this individual permit.

Table 1. Marathon Petroleum Outfalls and Treatment Units

| Outfall # | Type of Wastewater | Treatment Systems Used | Discharge Point | Flow Rate (MGD) |
|---|---|---|---|---|
| 001/003 | Refining process wastewater – 0.81 MGD, storm water runoff – 0.40 MGD, non-contact cooling water – 0.52 MGD, water treatment – 0.01 MGD, boiler blowdown – 0.31 MGD, contaminated ground water – 0.1 MGD | - oil/water separation<br>- pH adjustment<br>- metals precipitation<br>- dissolved air flotation<br>- flow equalization<br>- activated sludge aeration<br>- clarification<br>- filtration<br>- activated carbon | Hurford Run/ Tuscarawas River | 2.14 MGD (average |

Table 2 presents chemical specific data compiled from the NPDES renewal application, data reported in annual pretreatment reports, and data collected by Ohio EPA.

Table 3 presents a summary of unaltered Discharge Monitoring Report (DMR) data for outfall 3IG00000001. Data are presented for the period July 2005-July 2010, and current permit limits are provided for comparison.

Tables 4 and 5 summarize the results of acute and chronic whole effluent toxicity tests of the final effluent.

**Assessment of Impact on Receiving Waters**

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 Water Quality Standards 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 Water Quality Standards (WQS; Ohio Administrative Code 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 (IBI) and modified Index of Well-Being (MIwb), which indicate the response of the fish community, and the Invertebrate Community Index (ICI), 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 meet the biocriteria or one of the organism groups reflects poor or very poor performance. An aquatic life use attainment table (see Tables 6A and 6B) 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 (QHEI), and comments and observations for each sampling location.

*Marathon Petroleum*
Biological data from 2003-05 show that the upstream segment of Hurford Run is impaired beyond levels that would be expected from the local habitat modifications. Macroinvertebrate results downstream from the Marathon discharge showed very poor communities. Data taken from the stream near the mouth (warmwater habitat use designation) show poor communities of both fish and invertebrates.

The assessments described in both the Ohio EPA 2010 Integrated Water Quality Report and the Agency's Total Maximum Daily Load report for Nimishillen Creek indicate that the refinery contributes to impairments of both Hurford Run and Nimishillen Creek. Physical/chemical data from Hurford Run show affects from ammonia, dissolved solids and elevated temperatures; these pollutants are all discharged by Marathon Petroleum. In addition the TMDL report recommends phosphorus limits for all of the larger NPDES discharges in the Nimishillen Creek watershed to correct the point source portion of the nutrient enrichment impairment in Nimishillen Creek.

The re-routing of the discharge from Hurford Run to the Tuscarwas River would result in instream improvements, particularly to lower Hurford Run. The Tuscarawas River is attaining its WWH aquatic life use in the segment from Navarre to Dover. Meeting the wasteload allocations developed in this fact sheet would allow the Tuscarawas River to continue meeting the WWH use.

## 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.
This facility is considered to be interactive with the Timken Company; outfall 015, which discharges to Domer Ditch just upstream from the confluence with Hurford Run. The CONSWLA (conservative

substance wasteload allocation) model was used to distribute effluent loadings between these two entities. For the Tuscarawas River discharge option, Marathon was allocated individually.

*Parameter Selection* Effluent data for Marathon Petroleum were used to determine what parameters should undergo wasteload allocation. The sources of effluent data are as follows:

| | |
|---|---|
| Self-monitoring data (LEAPS) | July 2005 through July 2010 |
| Form 2C. data | 2010 |

The effluent data were checked for outliers and no values were removed.

This data is evaluated statistically, and Projected Effluent Quality (PEQ) values are calculated for each pollutant. Average PEQ ($PEQ_{avg}$) values represent the 95$^{th}$ percentile of monthly average data, and maximum PEQ ($PEQ_{max}$) values represent the 95$^{th}$ percentile of all data points. The average and maximum PEQ values are presented in Table 7.

The PEQ values are used according to Ohio rules to compare to applicable water quality standards (WQS) and allowable wasteload allocation (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 wasteload allocation is done for that parameter. If either $PEQ_{avg}$ or $PEQ_{max}$ is greater than 25 percent of the applicable WQS, a wasteload allocation is conducted to determine whether the parameter exhibits reasonable potential and needs to have a limit or if monitoring is required. See Tables 11A and 11B for summaries of the screening results.

*Wasteload Allocation* For those parameters that require a wasteload allocation (WLA), the results are based on the uses assigned to the receiving waterbody in OAC 3745-1. The applicable waterbody uses for this facility's discharge and the associated stream design flows are as follows:

| | | |
|---|---|---|
| Aquatic life (WWH) | | |
| 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 Tables 9A and 9B), and allocations cannot exceed the Inside Mixing Zone Maximum criteria.

The data used in the WLA are listed in Tables 8 and 9. The wasteload allocation results to maintain all applicable criteria are presented in Tables 10A and 10B.

*Dissolved Metals Translators* A dissolved metals translator (DMT) is the factor used to convert a dissolved metal aquatic life criterion to an effective total recoverable aquatic life criterion with which a total recoverable aquatic life allocation can be calculated as required in the NPDES permit process. Currently, a DMT is based on site- or area-specific field data; each field data sample consists of a total

recoverable measurement paired with a dissolved metal measurement. For Hurford Run, there were 5 such paired samples available applicable to copper, lead, silver, and zinc. To account for the limited quantity of data, the DMT for each of these metals was determined as the lower end of the 95% confidence interval (1-tail) about the geometric mean of the total recoverable-to-dissolved ratios of the sample pairs. Each DMT is metal-specific and is applied by multiplying the dissolved criteria by the DMT, resulting in total effective recoverable criteria which can be used in the wasteload allocation procedures.

In some cases, it is possible that the use of a DMT may result in instream concentrations of metals that may increase the risk of non-attainment of the aquatic life use designation. This was evaluated for the Timken Company. The application of the dissolved metal translators resulted in effective total recoverable criteria for copper, lead and zinc that were higher than the total recoverable criteria listed in OAC 3745-1. At the time of the most recent biological sampling in 2003 and 2005, Hurford Run downstream of the Marathon Petroleum discharge was not attaining the WWH designated use and the discharge of metals from Marathon Petroleum may have been contributing to the non-attainment. Therefore, in order to provide an adequate margin of safety for protection of aquatic life, the effective total recoverable criteria for zinc that resulted from the application of the DMT were adjusted to levels that are protective of applicable aquatic life use designations and biological criteria.

The DMTs used in the modeling for Hurford Run are based on sample data collected in 1998 and may no longer be representative of current instream conditions. Should Marathon Petroleum wish to continue using DMTs for future wasteload allocations (beyond the 2011 permit), a new DMT analysis or study must be completed prior to the next permit renewal and submitted with the renewal application. See paragraphs F and G in rule 3745-2-04 of the Ohio Administrative Code for requirements in developing a DMT study.

*Reasonable Potential* The preliminary effluent limits are the lowest average WLA (average PEL) and the maximum WLA (maximum PEL). To determine the reasonable potential of the discharger to exceed the WLA for each parameter, the facility's effluent quality is compared to the preliminary effluent limits. The average PEQ value (Table 7) is compared to the average PEL, and the maximum PEQ value is compared to the maximum PEL. Based on the calculated percentage of the respective average and maximum comparisons, the parameters are assigned to "groups", as listed in Tables 11A and 11B.

*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.

Water quality standards 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). Wasteload allocations can then be calculated using TUs as if they were water quality criteria.

The wasteload allocation calculations are similar to those for aquatic life criteria (using the chronic toxicity unit ($TU_c$) and 7Q10 for average and the acute toxicity unit ($TU_a$) and 1Q10 for maximum). The calculations for $TU_a$ consider interactivity with the Timken Company 015 outfall. For Marathon Petroleum's discharge to Hurford Run, the WLA values are 0.33 $TU_a$ and 3.11 $TU_c$. For the discharge to the Tuscarawas River, the WLA values are 1.0 $TU_a$ and 31 $TU_c$.

The chronic toxicity unit ($TU_c$) is defined as 100 divided by the $IC_{25}$:

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

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):

$$TU_c = 100/\text{geometric mean of NOEC and LOEC}$$

The acute toxicity unit ($TU_a$) is defined as 100 divided by the $LC_{50}$ 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 wasteload allocation 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 wasteload allocation for Marathon is 30 percent mortality in 100 percent effluent based on the dilution ratio of less than 2 to 1.

**Reasonable Potential/ Effluent Limits/Hazard Management Decisions**

After appropriate effluent limits are calculated, the reasonable potential of the discharger to violate the water quality standards must be determined. Each parameter is examined and placed in a defined "group". Parameters that do not have a water quality standard or do not require a wasteload allocation 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 wasteload allocations are selected from Tables 10A and 10B. The average PEL ($PEL_{avg}$) is compared to the average PEQ ($PEQ_{avg}$) from Table 7, 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 Tables 11A and 11B.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Tables 12A and 12B present the final effluent limits and monitoring requirements proposed for Marathon outfalls 3IG00000001 and 3IG00000003 and the basis for their recommendation.

Federal and State laws and regulations require that dischargers meet both treatment-technology-based limits and any more stringent standards needed to comply with state WQS. Permit limits are based on the more restrictive of the two.

As part of the Petroleum Refining Industry, Treatment-technology-based limits from 40 CFR Part 419, Subpart B – Cracking, apply to the wastewater discharged from outfall 001/003. The regulations on process water discharges are based on the pounds of pollutant allowed to be discharged per 1000 barrels of petroleum throughput, the size of the refinery and the process configuration of the refinery. The plant production rates used are from the facility's highest month production from the last five years (86,800 barrels per day).

The effluent guidelines also contain allowances for contaminated storm water treated with the process wastewaters. These are expressed as pounds of pollutant per 1000 gallons of storm water treated. Marathon treats approximately 0.4 MGD of process area storm water through the treatment plant.

BCT limits are calculated by multiplying the refinery throughput (in thousand barrels/day) by the effluent guideline factor (pounds/thousand barrels) by a size factor and a process factor to obtain the allowable kilograms/day that can be discharged. Production and process information were supplied by Marathon in the application, and revised since. A sample calculation is shown below. A summary of all effluent guideline limitations is shown in the attachment to this fact sheet.

Lower Tier BPT/BCT:

TSS Load =

Production x guideline x conversion factor x size factor x process factor =
86.8 kbbl/day x 4.4 lbs./kbbl x 0.454 kg/lb. x 1.13 x 1.89 = 371 kg/day (30-day average)

BAT limits for COD, ammonia-N and sulfide are calculated in the same way as BPT/BCT. BAT limits for phenolics, chromium and hexavalent chromium are based on guideline allowances for each type of process in the refinery. For these last three pollutants, the BAT limits are calculated by multiplying the crude oil production totals by the crude guideline value, multiplying the cracking/coking production by the cracking/coking guideline value, multiplying the catalytic reforming production by the reforming guideline value, and then adding the three loads to get the total load allowable by the guidelines. A sample of this calculation for phenolics in the lower tier:

Phenolics load =

[(86.8 kbbl/day x 0.003 lbs./kbbl) + (86.8 kbbl/day x 0.036 lbs./kbbl) + (1.4 kbbl/day x 0.019 lbs./kbbl) + (21.6 kbbl/day x 0.032 lbs/kbbl)] x 0.454 kg/lb. = 1.87 kg/day (30-day average)

The guidelines also contain allowances for storm water that is treated. In this permit the upper tier limits contain these allowances. The storm water allowances are calculated by multiplying the guideline factor by the storm water flow (in thousand gallons). The storm water allowance is added to the lower tier limit to obtain the upper tier limit.

For phenolics, the allowance is calculated:

.0014 lbs./kgal x 400 kgal x 0.454 kg/lb. = 0.255 kg/day (30-day average)
1.87 kg/day + 0.255 kg/day = 2.12 kg/day

These BCT/BAT limits are less restrictive than the current permit limits. They are not used as a basis for any effluent limits because Marathon did not request an increase in limits with their application.

*Outfall 001 Limits and Conditions*
Many of the discharge limits for this outfall are being carried over from the current permit. These include BOD5, COD, Total Suspended Solids, oil & grease, ammonia (summer 30-day limit), fluoride, sulfide, phenolics, chromium and hexavalent chromium. All of these loadings except oil & grease, ammonia and fluoride are based on previous effluent guideline calculations. Concentration limits were derived by dividing the load limit by the effluent flow and a conversion factor (3.785 liters per gallon).

For oil & grease, the discharge concentration limit was set based on the capability of standard oil removal equipment. The loading limit was calculated by multiplying the concentrations by the effluent flow and 3.785.

The limits for ammonia (summer 30-day) and fluoride are based on previous wasteload allocations. These limits are more stringent than the current wasteload allocation, and are being continued in the draft permit.

Maximum summer ammonia limits and winter ammonia limits are included because: (1) ammonia is an effluent guideline parameter and must have limits in the permit; and (2) the wasteload allocation limits are more restrictive than the effluent guideline limits. The WLA-based limits must be included to ensure that the permit limits meet WQS.

Concentration and loading limits were calculated using different flows for different parameters, based on the requirements of Ohio's permit and antidegradation rules. The new loading limits for dissolved solids, ammonia-nitrogen and selenium were calculated using a flow of 1.89 MGD, which is the flow used in the current wasteload allocation. Fluoride load limits were calculated using a flow of 1.44 MGD, and the concentration limits for BOD, COD, suspended solids, oil&grease, sulfide, phenolics, chromium and hexavalent chromium were calculated using a flow of 1.67 MGD. These lower flows were used because Marathon did not request additional loading in their renewal application.

Limits proposed for temperature, pH, and e. coliform are based on Water Quality Standards (OAC 3745-1-07). The e. coli. limits replace the existing fecal coliform limits, and are based on new water quality standards that went into effect on March 15, 2010. The limits are based on the standards for Primary Contact Recreation Class B waters. Ohio EPA implements the seasonal average standard as a 30-day limit; the single sample maximum standard is implemented as a daily maximum permit limit.

Limits for phosphorus are based on the Nimishillen Creek Total Maximum Daily Load Report. All of the larger dischargers in the watershed were required to meet 1.0 mg/l phosphorus as a 30-day average. A maximum limit of 1.5 mg/l is based on the performance of standard biological treatment systems.

The Ohio EPA risk assessment (Table 11A) places chlorine, selenium and total dissolved solids in group 5. This placement as well as the data in Tables 2, 3 and 7 indicate that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality. Pollutants that meet this requirement must have permit limits under OAC Rule 3745-33-07(A)(1). The limits for all of these parameters are based on the wasteload allocation.

Ohio EPA risk assessment (Table 11A) places barium in group 4. This placement as well as the data in Tables 2, 3 and 7 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 Rule 3745-33-07(A)(2).

Monitoring requirements for mercury using low-level methods are included in the draft permit. Data available from U.S. EPA development documents and other sources indicate that facilities processing primary materials, such as oil, coal and metal ores tend to contain low levels of mercury. The monitoring requirement is intended to establish whether the discharge is meeting the 12 ng/l water quality standard for Ohio River Basin waters.

*Outfall 003 Limits and Conditions*

Most of the limits for this outfall are also being carried over from the current permit because they are more restrictive than the effluent guidelines. These include BOD5, COD, Total Dissolved Solids, Total Suspended Solids, oil & grease, ammonia (summer 30-day limit), sulfide, phenolics, chromium and hexavalent chromium.

Maximum summer ammonia limits and winter ammonia limits are included because: (1) ammonia is an effluent guideline parameter and must have limits in the permit; and (2) the wasteload allocation limits are more restrictive than the effluent guideline limits. The WLA-based limits must be included to ensure that the permit limits meet WQS.

The flow basis for converting loading limits and concentrations for all parameters except ammonia-nitrogen is the design flow of 2.2 MGD. The loading limits for ammonia-N are based on the WLA flow of 1.89 MGD.

Limits proposed for pH, and e. coliform are based on Water Quality Standards (OAC 3745-1-07). The e. coli. limits replace the existing fecal coliform limits, and are based on new water quality standards that went into effect on March 15, 2010. The limits are based on the standards for Primary Contact Recreation Class A waters. Ohio EPA implements the seasonal average standard as a 30-day limit; the single sample maximum standard is implemented as a daily maximum permit limit.

Phosphorus monitoring requirements would be included for the 003 discharge. Modeling done as part of the Tuscarawas TMDL report indicates that this discharge would not have the reasonable potential to contribute to WQS exceedances. However, monitoring for phosphorus is included in permits for all major dischargers in this segment of the Tuscarawas River to track any trends in point source contributions of nutrients.

The Ohio EPA risk assessment (Table 11B) places chlorine in group 5. This placement as well as the data in Tables 2, 3 and 7 indicate that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality. For these parameters PEQ is greater than 100 percent of the wasteload

allocation. Pollutants that meet this requirement must have permit limits under OAC Rule 3745-33-07(A)(1).

Ohio EPA risk assessment (Table 11B) places fluoride in group 4. This placement as well as the data in Tables 2, 3 and 7 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 Rule 3745-33-07(A)(2).

Ohio EPA risk assessment (Table 11B) places selenium and total dissolved solids in group 3. This placement as well as the data in Tables 2, 3 and 7 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 is proposed to document that these potentially toxic pollutants continue to remain at low levels.

*Whole Effluent Toxicity Reasonable Potential*

Hurford Run - Based on evaluating the whole effluent toxicity data presented in Tables 4 and 5 and other pertinent data under the provisions of OAC 3745-33-07(B), the Marathon 001 discharge is placed in Category 1 with respect to whole effluent toxicity.

The main reason for this categorization is the very poor condition of the Hurford Run macroinvertebrate community in combination with periodic exceedances of the chronic WLA (about 15 percent of the time). The macroinvertebrate community shows evidence of toxic impact, and the discharge exhibits some chronic toxicity in almost every test.

Previous toxicity identification studies have determined that dissolved solids are the cause of the toxicity in the Marathon effluent. Ohio EPA is choosing to set water quality-based limits for dissolved solids instead of setting limits for chronic toxicity. Limiting TDS limits the source of toxicity, and the less expensive analysis provides better feedback and compliance data on the toxic pollutant source than toxicity limits would. The permit retains periodic toxicity test requirements to ensure that any other sources of toxicity are detected.

Tuscarawas River – Based on evaluating the whole effluent toxicity data presented in Tables 4 and 5 and other pertinent data under the provisions of OAC 3745-33-07(B), the Marathon 003 discharge is placed in Category 3 with respect to whole effluent toxicity.

The effluent levels of chronic toxicity indicate that the discharge does not have the reasonable potential to contribute to exceedances of WQS in the Tuscarawas River, based on a comparison of effluent toxicity data with the WLA of 31 TUc. There have been no detections of acute toxicity using the current test organisms.

The draft permit does contain minimal acute toxicity testing using *Ceriodaphnia dubia* to ensure that the discharge is not toxic to organisms representative of WWH communities. Ohio EPA allows testing using *Daphnia magna* only for discharges to waters classified as Modified Warmwater Habitat or Limited Resource Water. Daphnia magna are representative organisms for these lower aquatic life uses, but are not likely to be representative of WWH communities. Ohio EPA is proposing to change the Outfall 003 test organism for this reason. Chronic testing would not be required because of the minimal probability of exceeding the 31 TUc allocation.

## Other Requirements

*Compliance Schedule*
We have included a compliance schedule to allow time for Marathon to meet the limits for total dissolved solids and selenium at outfall 001. The discharge can not currently comply with the water quality-based limits for these parameters. For selenium, the company would need to identify those wastestreams with treatable concentrations, and design collection and pre-treatment facilities to meet the final limit. For dissolved solids, treatment or recycling will likely be necessary to meet the Hurford Run WQS. As an alternative the permit allows Marathon to move the discharge to the Tuscarawas River (outfall 003). The current discharge would meet WQBELs applicable to a Tuscarawas River discharge.

*Operator Certification*
Operator certification requirements have been included in Part II, Item A of the permit in accordance with rules adopted in December 2006. These rules require Marathon to have a Class III wastewater treatment plant operator in charge of the sewage treatment plant operations discharging through outfall 001/003 .

*Operator of Record*
In December 2006, Ohio Administrative Code rule revisions became effective which affect the requirements for certified operators for sewage collection systems and treatment works regulated under NPDES permits. Part II, Item A of this NPDES permit represents language necessary to implement rule 3745-7-02 of the Ohio Administrative Code (OAC), and requires the permittee to designate one or more operator of record to oversee the technical operation of the treatment works.

*Outfall Signage*
Part II of the permit includes requirements for signs to be placed at each outfall to Hurford Run or the Tuscarawas River, providing information about the discharge. Signage at outfalls is required pursuant to Ohio Administrative Code 3745-33-08(A).

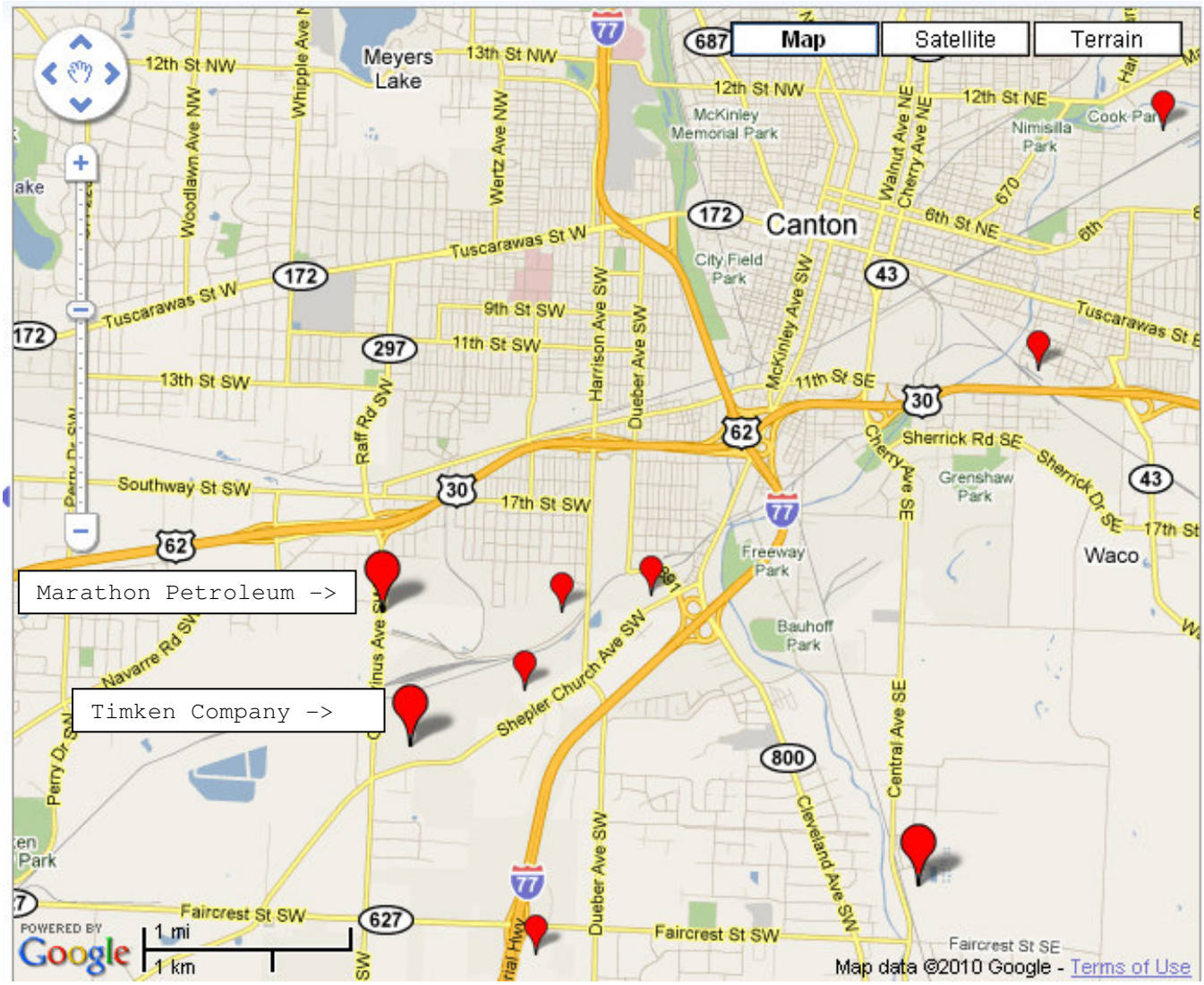


Figure 1. Approximate location of the Marathon Petroleum Refinery. Balloons indicate NPDES permitted discharges. Large balloons are major dischargers.

Table 2. Effluent Characterization and Decision Criteria

Summary of analytical results for Marathon-Ashland outfall 3IG00000001. All values are in ug/l unless otherwise indicated. 2C = Data from application form 2C; OEPA = data from analyses by Ohio EPA; ND = below detection (detection limit); NA = not analyzed. Decision Criteria: $PEQ_{avg}$ = monthly averages; $PEQ_{max}$ = daily maximum analytical results.

| | Marathon-Ashland 2010 App. Form 2C | | | | DECISION CRITERIA | |
|---|---|---|---|---|---|---|
| PARAMETER | N | mean | maximum | | $PEQ_{avg}$ | $PEQ_{max}$ |
| BOD5 mg/l | 432 | 1.0 | 13 | | | |
| COD mg/l | 432 | 30.9 | 83 | | | |
| Suspended Solids mg/l | 432 | 0.3 | 16 | | | |
| Ammonia-N mg/l | 433 | 0.4 | 167 | | 2.697 | 2.823 |
| Nitrate/Nitrite-N mg/l3 | -- | 0.7 | | 1.533 | 2.1 | |
| Organic N mg/l | 2 | -- | 1.35 | | | |
| Phosphorus mg/l | 3 | 0.8 | 4.85 | | | |
| Bromide mg/l | 3 | -- | 20.07 | | | |
| Chlorine, TRec mg/l | 10 | 0.0 | 0.1 | | 0.117 | 0.16 |
| Fluoride mg/l | 26 | 47.8 | 148 | | 96.45 | 149.5 |
| Oil&grease mg/l | 432 | 0.0 | 6 | | | |
| Sulfate mg/l | 3 | -- | 289 | | 633 | 867 |
| Cyanide, T mg/l | 3 | -- | 0.01 | | | |
| Aluminum | 3 | -- | 166 | | 363 | 498 |
| Arsenic | 3 | -- | 13 | | 28.5 | 39 |
| Barium | 45 | 200 | 405 | | 339 | 434 |
| Boron | 3 | -- | 475 | | 1040 | 1425 |
| Cobalt | 3 | -- | 3 | | 6.6 | 9.0 |
| Iron | 3 | -- | 100 | | 219 | 300 |
| Magnesium mg/l | 3 | -- | 36.61 | | 80.18 | 109.8 |
| Manganese | 3 | -- | 78 | | 171 | 234 |
| Molybdenum | 3 | -- | 135 | | 296 | 405 |
| Nickel | 3 | -- | 8 | | 18 | 24 |
| Selenium | 15 | 0.0 | 64 | | 54 | 91 |
| Zinc | 3 | -- | 36 | | 79 | 108 |

Table 3. Effluent Characterization and Decision Criteria

Summary of current permit limits and unaltered monthly operating report (MOR) data for Marathon Petroleum outfall 3IG00000001. All values are based on annual records unless otherwise indicated. N = Number of Analyses. * = For pH, 5th percentile shown in place of 50th percentile; ** = For dissolved oxygen, 5th percentile shown in place of 95th percentile; A = 7 day average. Decision Criteria: $PEQ_{avg}$ = monthly average; $PEQ_{max}$ = daily maximum analytical results.

| Parameter | Season | Units | Current Permit Limits | | # Obs. | Percentiles | | Data Range | Decision Criteria | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 30 day | Daily | | 50th | 95th | | # Obs. | $PEQ_{ave}$ | $PEQ_{max}$ |
| **Outfall 001** | | | | | | | | | | | |
| Water Temperature | Annual | C | -- | 37 | 1857 | 30.6 | 38.3 | 20.5-43.3 | | | |
| Biochemical Oxygen Demand, 5 Day | Summer | mg/l | 57 | 103 | 372 | 0 | 6 | 0-20 | | | |
| Biochemical Oxygen Demand, 5 Day | Winter | mg/l | 57 | 103 | 356 | 0 | 6 | 0-41 | | | |
| Biochemical Oxygen Demand, 5 Day | Summer | kg/day | 311 | 561 | 372 | 0 | 34.8 | 0-120 | | | |
| Biochemical Oxygen Demand, 5 Day | Winter | kg/day | 311 | 561 | 356 | 0 | 34.5 | 0-205 | | | |
| Chemical Oxygen Demand (Low Level) | Annual | mg/l | 292 | 583 | 732 | 29 | 68.9 | 0-280 | | | |
| Chemical Oxygen Demand (Low Level) | Annual | kg/day | 1589 | 3178 | 732 | 172 | 401 | 0-1430 | | | |
| pH | Annual | S.U. | 6.5 to 9.0 | | 1127 | 7.4 | 7.7 | 6.8-8.5 | | | |
| Residue, Total Dissolved | Annual | mg/l | Monitor | | 247 | 2670 | 3380 | 1750-3970 | 247 | 3071 | 3478 |
| Residue, Total Dissolved | Annual | kg/day | -- | -- | 247 | 16000 | 21400 | 7230-25700 | | | |
| Total Suspended Solids | Annual | mg/l | 46 | 72 | 732 | 0 | 5 | 0-44 | | | |
| Total Suspended Solids | Annual | kg/day | 249 | 391 | 732 | 0 | 28.9 | 0-222 | | | |
| Oil and Grease, Total | Annual | mg/l | 15 | 20 | 732 | 0 | 0 | 0-6 | | | |
| Oil and Grease, Total | Annual | kg/day | 81.8 | 109 | 732 | 0 | 0 | 0-42.6 | | | |
| Nitrogen, Ammonia (NH3) | Summer | mg/l | 3.6 | -- | 373 | 0.1 | 2.91 | 0-9.85 | 253 | 2.697 | 2.823 |
| Nitrogen, Ammonia (NH3) | Winter | mg/l | Monitor | | 360 | 0 | 2.82 | 0-167 | 179 | 7.411 | 10.15 |
| Nitrogen, Ammonia (NH3) | Summer | kg/day | 19.6 | -- | 373 | 0.558 | 16.7 | 0-54 | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrogen, Ammonia (NH3) | Winter | kg/day | | Monitor | 360 | 0 | 15.9 | 0-1150 | | | |
| Sulfide, Total | Annual | mg/l | 0.3 | 0.67 | 21 | 0 | 0 | 0-0 | | | |
| Sulfide, Total | Annual | kg/day | 1.63 | 3.67 | 21 | 0 | 0 | 0-0 | | | |
| Fluoride, Total (F) | Annual | mg/l | | Monitor | 43 | 16.4 | 95.8 | 1.64-148 | 43 | 96.45 | 149 |
| Fluoride, Total (F) | Annual | kg/day | -- | -- | 43 | 94.2 | 559 | 10.5-1270 | | | |
| Selenium, Total Recoverable | Annual | ug/l | | Monitor | 22 | 24 | 39.8 | 0-64 | 22 | 53.7 | 91.2 |
| Selenium, Total Recoverable | Annual | kg/day | -- | -- | 22 | 0.13 | 0.276 | 0-0.344 | | | |
| Barium, Total Recoverable | Annual | ug/l | | Monitor | 69 | 269 | 350 | 102-405 | 69 | 339 | 434 |
| Barium, Total Recoverable | Annual | kg/day | -- | -- | 69 | 1.5 | 2.3 | 0.461-2.6 | | | |
| Chromium, Hexavalent (Cr +6) | Annual | ug/l | 13 | 17 | 10 | 0 | 0 | 0-0 | | | |
| Chromium, Hexavalent (Cr +6) | Annual | kg/day | 0.071 | 0.093 | 10 | 0 | 0 | 0-0 | | | |
| Chromium, Total Recoverable | Annual | ug/l | 117 | 991 | 13 | 0 | 0 | 0-0 | | | |
| Chromium, Total Recoverable | Annual | kg/day | 0.64 | 5.41 | 13 | 0 | 0 | 0-0 | | | |
| 21 Day Daphnia Magna, Chronic Toxicity | Annual | TUc | | Monitor | 19 | 2.2 | 3.8 | 0-3.8 | | | |
| 48 Hour Daphnia Magna, Acute Toxicity | Annual | TUa | | Monitor | 20 | 0 | 0 | 0-0 | | | |
| Phenolic 4AAP, Total | Annual | ug/l | 165 | 330 | 67 | 0 | 0 | 0-21 | | | |
| Phenolic 4AAP, Total | Annual | kg/day | 0.9 | 1.8 | 67 | 0 | 0 | 0-0.116 | | | |
| Bis(2-ethylhexyl) Phthalate | Annual | ug/l | -- | -- | 17 | 0 | 0 | 0-0 | | | |
| Bis(2-ethylhexyl) Phthalate | Annual | kg/day | -- | -- | 17 | 0 | 0 | 0-0 | | | |
| Flow Rate | Annual | MGD | | Monitor | 1857 | 1.62 | 2.08 | 0.146-2.65 | | | |
| Chlorine, Total Residual | Annual | mg/l | -- | -- | 13 | 0.02 | 0.1 | 0-0.1 | 13 | 0.12 | 0.16 |
| Chlorine, Total Residual | Annual | kg/day | -- | -- | 13 | 0.142 | 0.53 | 0-0.644 | | | |
| Acute Toxicity, Pimephales promelas | Annual | TUa | | Monitor | 21 | 0 | 0.3 | 0-0.4 | | | |
| Chronic Toxicity, Pimephales promelas | Annual | TUc | | Monitor | 21 | 0 | 1.3 | 0-2.2 | | | |
| pH, Maximum | Annual | S.U. | -- | 9.0 | 730 | 7.2 | 7.7 | 6.8-9.1 | | | |
| pH, Minimum | Annual | S.U. | -- | 6.5 | 730 | 7 | 7.3 | 6.6-7.8 | | | |

Table 4. Summary of acute toxicity test results on the Marathon Petroleum Outfall 001 wastewater treatment plant effluent.

| Test Date(a) | *Daphnia magna 48 hours* | | | | | | *Fathead Minnows 96 hour* | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | UP[b] | C[c] | $LC_{50}$[d] | %M[g] | TUa[h] | NF[i] | UP[b] | C[c] | $LC_{50}$[d] | %M[g] | TUa[h] | NF[i] |
| 7/05 (E) | NT | NR | >100 | 0 | <1.0 | NT | NT | NR | >100 | 0 | <1.0 | NR |
| 11/05 (E) | NT | NR | >100 | 0 | <1.0 | NT | NT | NR | >100 | 0 | <1.0 | NR |
| 2/06 (E) | NT | NR | >100 | 0 | <1.0 | NT | NT | NR | >100 | 15 | <1.0 | NR |
| 5/06 (E) | NT | NR | >100 | 0 | <1.0 | NT | NT | NR | >100 | 0 | <1.0 | NR |
| 7/06 (E) | NT | NR | >100 | 0 | <1.0 | NT | NT | NR | >100 | 0 | <1.0 | NR |
| 11/06 (E) | NT | NR | >100 | 0 | <1.0 | NT | NT | NR | >100 | 0 | <1.0 | NR |
| 2/07 (E) | NT | NR | >100 | 0 | <1.0 | NT | NT | NR | >100 | 0 | <1.0 | NR |
| 5/07 (E) | NT | NR | >100 | 0 | <1.0 | NT | NT | NR | >100 | 0 | <1.0 | NR |
| 7/07 (E) | NT | NR | >100 | 0 | <1.0 | NT | NT | NR | >100 | 0 | <1.0 | NR |
| 11/07 (E) | NT | NR | >100 | 0 | <1.0 | NT | NT | NR | >100 | 0 | <1.0 | NR |
| 2/08 (E) | NT | NR | >100 | 0 | <1.0 | NT | NT | NR | >100 | 0 | <1.0 | NR |

[a] O = EPA test; E = entity test
[b] UP = upstream control water
[c] C = laboratory water control
[d] $LC_{50}$ = median lethal concentration
[g] %M = percent mortality in 100% effluent
[h] TUa = acute toxicity units
[i] NF = near field sample in N/A
NR = not reported in OEPA database; NT = not tested

Table 4. continued**.**

| Test Date(a) | *Daphnia magna 48 hours* | | | | | | *Fathead Minnows 96 hour* | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | UP[b] | C[c] | $LC_{50}$[d] | %M[g] | TUa[h] | NF[i] | UP[b] | C[c] | $LC_{50}$[d] | %M[g] | TUa[h] | NF[i] |
| 5/08 (E) | NT | NR | >100 | 0 | <1.0 | NT | NT | NR | >100 | 0 | <1.0 | NR |
| 7/08 (E) | NT | NR | >100 | 0 | <1.0 | NT | NT | NR | >100 | 0 | <1.0 | NR |
| 11/08 (E) | NT | NR | >100 | 0 | <1.0 | NT | NT | NR | >100 | 0 | <1.0 | NR |
| 2/09 (E) | NT | NR | >100 | 0 | <1.0 | NT | NT | NR | >100 | 0 | <1.0 | NR |
| 5/09 (E) | NT | NR | >100 | 0 | <1.0 | NT | NT | NR | >100 | 0 | <1.0 | NR |
| 7/09 (E) | NT | NR | >100 | 0 | <1.0 | NT | NT | NR | >100 | 0 | <1.0 | NR |
| 11/09 (E) | NT | NR | >100 | 0 | <1.0 | NT | NT | NR | >100 | 20 | <1.0 | NR |
| 2/10 (E) | NT | NR | >100 | 0 | <1.0 | NT | NT | NR | >100 | 0 | <1.0 | NR |
| 5/10 (E) | NT | NR | >100 | 0 | <1.0 | NT | NT | NR | >100 | 0 | <1.0 | NR |
| 7/10 (E) | I | I | I | I | I | I | NT | NR | >100 | 0 | <1.0 | NR |
| | | | | | | | | | | | | |

[a] O = EPA test; E = entity test
[b] UP = upstream control water
[c] C = laboratory water control
[d] $LC_{50}$ = median lethal concentration
NT = not tested
[g] %M = percent mortality in 100% effluent
[h] TUa = acute toxicity units
[i] NF = near field sample in N/A
NR = not reported in OEPA database
I = Invalid test

Table 5. Summary of chronic toxicity test results on Marathon Petroleum Outfall 001 wastewater treatment plant effluent.

| Test Date (a) | *Daphnia magna 21-Day* | | | | | | | | | | | *Fathead Minnows 7-Day* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | UP[b] | C[c] | $IC_{25}$[d] | $TU_c$[e] | Survival | | | Reproduction | | | FF[i] | UP[b] | C[c] | $IC_{25}$[d] | $TU_c$[e] | FF[i] |
| | | | | | LOEC[f] | NOEC[g] | $TU_c$[h] | LOEC[f] | NOEC[g] | $TU_c$[h] | | | | | | |
| 7/05 (E) | NT | NR | NR | 3.8 | NR | NR | 3.8 | NR | NR | 3.8 | NT | NT | NR | 77 | 1.3 | NT |
| 11/05 (E) | NT | NR | NR | 2.2 | NR | NR | 2.2 | NR | NR | 2.2 | NT | NT | NR | >100 | <1.0 | NT |
| 2/06 (E) | NT | NR | NR | 2.2 | NR | NR | 2.2 | NR | NR | 2.2 | NT | NT | NR | 77 | 1.3 | NT |
| 5/06 (E) | NT | NR | NR | 2.2 | NR | NR | 2.2 | NR | NR | 2.2 | NT | NT | NR | >100 | <1.0 | NT |
| 7/06 (E) | NT | NR | >100 | <1.0 | >100 | 100 | <1.0 | >100 | 100 | <1.0 | NT | NT | NR | >100 | <1.0 | NT |
| 11/06 (E) | NT | NR | NR | 2.2 | NR | NR | 2.2 | NR | NR | 2.2 | NT | NT | NR | >100 | <1.0 | NT |
| 2/07 (E) | NT | NR | NR | 3.8 | NR | NR | 3.8 | NR | NR | 3.8 | NT | NT | NR | >100 | <1.0 | NT |
| 5/07 (E) | NT | NT | NT | NT | NT | NT | NT | NT | NT | NT | NT | NT | NR | >100 | <1.0 | NT |
| 7/07 (E) | NT | NR | NR | 3.8 | NR | NR | 3.8 | NR | NR | 3.8 | NT | NT | NR | >100 | <1.0 | NT |
| 11/07 (E) | NT | NR | NR | 1.3 | NR | NR | 1.3 | NR | NR | 1.3 | NT | NT | NR | >100 | <1.0 | NT |
| 2/08 (E) | NT | NR | >100 | <1.0 | >100 | 100 | <1.0 | >100 | 100 | <1.0 | NT | NT | NR | >100 | <1.0 | NT |

[a]O = EPA test; E = entity test
[b]UP = upstream control water
[c]C = laboratory water control
[d]$IC_{25}$ = inhibition concentration twenty-five
[e]$TU_c$ = chronic toxicity units based on $IC_{25}$
[f]LOEC = lowest observed effects concentration
[g]NOEC = no observed effects concentration
[h]$TU_c$ = chronic toxicity units based on LOEC and NOEC
[i]FF = far-field effect
[j]$STU_c$ = TUc based on LOEC and NOEC for survival
[k]$GTU_c$ = TUc based on LOEC and NOEC for growth
NR = not reported in OEPA data base; NT = not tested

Table 5. continued.

| Test Date (a) | *Daphnia magna 21-Day* | | | | | | | | | | | *Fathead Minnows 7-Day* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | UP[b] | C[c] | $IC_{25}$[d] | $TU_c$[e] | Survival | | | Reproduction | | | FF[i] | UP[b] | C[c] | $IC_{25}$[d] | $TU_c$[e] | FF[i] |
| | | | | | LOEC[f] | NOEC[g] | $TU_c$[h] | LOEC[f] | NOEC[g] | $TU_c$[h] | | | | | | |
| 5/08 (E) | NT | NR | NR | 2.2 | NR | NR | 2.2 | NR | NR | 2.2 | NT | NT | NR | >100 | <1.0 | NT |
| 7/08 (E) | NT | NR | NR | 1.3 | NR | NR | 1.3 | NR | NR | 1.3 | NT | NT | NR | >100 | <1.0 | NT |
| 11/08 (E) | NT | NR | NR | 1.3 | NR | NR | 1.3 | NR | NR | 1.3 | NT | NT | NR | >100 | <1.0 | NT |
| 2/09 (E) | NT | NR | NR | 2.2 | NR | NR | 2.2 | NR | NR | 2.2 | NT | NT | NR | >100 | <1.0 | NT |
| 5/09 (E) | NT | NR | NR | 2.2 | NR | NR | 2.2 | NR | NR | 2.2 | NT | NT | NR | >100 | <1.0 | NT |
| 7/09 (E) | NT | NR | NR | 1.3 | NR | NR | 1.3 | NR | NR | 1.3 | NT | NT | NR | >100 | <1.0 | NT |
| 11/09 (E) | NT | NR | NR | 2.18 | NR | NR | 2.18 | NR | NR | 2.18 | NT | NT | NR | 77.5 | 1.29 | NT |
| 2/10 (E) | NT | NR | NR | 1.29 | NR | NR | 1.29 | NR | NR | 1.29 | NT | NT | NR | >100 | <1.0 | NT |
| 5/10 (E) | NT | NR | NR | 1.3 | NR | NR | 1.3 | NR | NR | 1.3 | NT | NT | NR | 45 | 2.2 | NT |
| 7/10 (E) | I | I | I | I | I | I | I | I | I | I | I | NT | NR | >100 | <1.0 | NT |
| | | | | | | | | | | | | | | | | |

[a]O = EPA test; E = entity test
[b]UP = upstream control water
[c]C = laboratory water control
[d]$IC_{25}$ = inhibition concentration twenty-five
[e]$TU_c$ = chronic toxicity units based on $IC_{25}$
[f]LOEC = lowest observed effects concentration
[g]NOEC = no observed effects concentration
[h]$TU_c$ = chronic toxicity units based on LOEC and NOEC
[i]FF = far-field effect
[j]$STU_c$ = TUc based on LOEC and NOEC for survival
[k]$GTU_c$ = TUc based on LOEC and NOEC for growth
NR = not reported in OEPA data base; NT = not tested; I = Invalid test

Table 6A. Summary of the aquatic life use attainment status for the Limited Resource Water and Warmwater habitat use designations in Hurford Run based on data collected by the Ohio EPA from 2003 to 2005. Both sites are in the Erie-Ontario Lake Plain Ecoregion. H - Headwater electrofishing site;

| RIVER MILE Fish/Macro. | IBI | Mod. Iwb | ICI | QHEI | Use Attain-ment Status | Comments |
|---|---|---|---|---|---|---|
| --/ 1.8 | -- | -- | VP | -- | Impaired | Dst. Marathon, LRW use |
| 0.1/0.1 (H) | 24* | NA | P | 69 | NON | Near mouth, WWH use |

Table 6B. Summary of the aquatic life use attainment status for the Warmwater habitat use designation in the Tuscarawas River based on data collected by the Ohio EPA from 2003 to 2005. B - Boat electrofishing site.

| RIVER MILE Fish/Macro. | IBI | Mod. Iwb | ICI | QHEI | Use Attain-ment Status | Comments |
|---|---|---|---|---|---|---|
| *Erie-Ontario Lake Plain Ecoregion* | | | | | | |
| 81.46/81.46 (B) | 49 | 8.8 | 36 | 81 | FULL | Riverland Ave. Navarre |
| | | | | | | |
| *Western Allegheny Plateau Ecoregion* | | | | | | |
| | RM 79.98 proposed discharge | | | | | |
| 78.16/78.16 (B) | 44 | 8.7 | 42 | 85.5 | FULL | SR 212 @ Bolivar |
| 73.67/73.67 (B) | 46 | 9.0 | 40 | 73.5 | FULL | Sherman Church Avenue |
| 72.6/72.6 (B) | 41 | 9.2 | 42 | 78.5 | FULL | Dst. Sandy Creek |
| | | | | | | |

*Ecoregion Biocriteria: Erie-Ontario Lake Plain*

| | | IBI | | | MIwb | | | ICI | |
|---|---|---|---|---|---|---|---|---|---|
| Site Type | WWH | EWH | MWH | WWH | EWH | MWH | WWH | EWH | MWH |
| Headwaters | 40 | 50 | 24 | NA | NA | NA | 34 | 46 | 22 |
| Wading | 38 | 50 | 24 | 7.9 | 9.4 | 6.2 | 34 | 46 | 22 |
| Boat | 40 | 48 | 24 | 8.7 | 9.6 | 6.6 | 34 | 46 | 22 |

*Ecoregion Biocriteria: Western Allegheny Plateau*

| | | IBI | | | MIwb | | | ICI | |
|---|---|---|---|---|---|---|---|---|---|
| Site Type | WWH | EWH | MWH | WWH | EWH | MWH | WWH | EWH | MWH |
| Headwaters | 44 | 50 | 24 | NA | NA | NA | 36 | 46 | 22 |
| Wading | 44 | 50 | 24 | 8.4 | 9.4 | 6.2 | 36 | 46 | 22 |
| Boat | 40 | 48 | 24 | 8.6 | 9.6 | 6.6 | 36 | 46 | 22 |

ns - Nonsignificant departure from biocriteria (<4 IBI or ICI units, or <0.5 MIwb units).

* - Indicates significant departure from applicable biocriteria (>4 IBI or ICI units, or >0.5 MIwb units). Underlined scores are in the Poor or Very Poor range.

Note that biocriteria do not apply to streams designated Limited Resource Water.

Table 7. Effluent Data for the Marathon Petroleum; outfall 001.

| Parameter | Units | # of Samples | # > MDL | Average PEQ | Maximum PEQ |
|---|---|---|---|---|---|
| Self-Monitoring (LEAPS) Data | | | | | |
| Total Dissolved Solids | mg/l | 247 | 247 | 3071. | 3478. |
| Ammonia – S | mg/l | 253 | 140 | 2.697 | 2.823 |
| Ammonia – W | mg/l | 179 | 58 | 7.411 | 10.15 |
| Sulfide | mg/l | 21 | 0 | -- | -- |
| Fluoride | µg/l | 43 | 43 | 96453. | 149480. |
| Selenium | µg/l | 22 | 21 | 53.71 | 91.25 |
| Barium | µg/l | 69 | 69 | 338.6 | 434.2 |
| Chromium$^{+6}$, diss. | µg/l | 10 | 0 | -- | -- |
| Chromium, tot. | µg/l | 13 | 0 | -- | -- |
| Phenolic 4AAP, tot. | µg/l | 67 | 1 | 15.33 | 21. |
| Bis(2-ethylhexyl) phthalate [C] | µg/l | 17 | 0 | -- | -- |
| Chlorine, tot. res. | µg/l | 13 | 9 | 116.8 | 160. |
| Nitrate+Nitrite | mg/l | 3 | 1 | 1.533 | 2.1 |
| Sulfate | mg/l | 3 | 1 | 632.9 | 867. |
| Aluminum | µg/l | 3 | 1 | 363.5 | 498. |
| Arsenic | µg/l | 3 | 1 | 28.47 | 39. |
| Boron | µg/l | 3 | 1 | 1040. | 1425. |
| Cobalt | µg/l | 3 | 1 | 6.57 | 9.0 |
| Iron | µg/l | 3 | 1 | 219. | 300. |
| Magnesium | mg/l | 3 | 1 | 80.18 | 109.8 |
| Manganese | µg/l | 3 | 1 | 170.8 | 234. |
| Molybdenum | µg/l | 3 | 1 | 295.7 | 405. |
| Nickel | µg/l | 3 | 1 | 17.52 | 24. |
| Zinc | µg/l | 3 | 1 | 78.84 | 108. |

[C] Carcinogen

Table 8A. Water Quality Criteria in the Study Area (Hufurd Run model – Outfall 001)

| Parameter | Units | Outside Mixing Zone Criteria | | | | Inside Mixing Zone Maximum |
|---|---|---|---|---|---|---|
| | | Average | | | Maximum | |
| | | Human Health | Agri-culture | Aquatic Life | Aquatic Life | |
| Arsenic | µg/l | -- | 100. | 150. | 340. | 680. |
| Barium | µg/l | -- | -- | 220. | 2000. | 4000. |
| Bis(2-ethylhexyl)phthalate | µg/l | 59c | -- | 8.4 | 1100 | 2100 |
| Boron | µg/l | -- | -- | 3900. | 33000. | 65000. |
| Chlorine, tot. res. | µg/l | -- | -- | 11. | 19. | 38. |
| Chromium, tot. | µg/l | -- | 100. | 270. | 5600. | 11000. |
| Chromium $^{+6}$, diss. | µg/l | -- | -- | 11. | 16. | 31. |
| Cobalt | µg/l | -- | -- | 24. | 220. | 440. |
| Fluoride | µg/l | -- | 2000. | -- | -- | -- |
| Iron | µg/l | -- | 5000. | -- | -- | -- |
| Lead | µg/l | -- | 100. | 42.[A] | 800.[A] | 1600.[A] |
| Mercury | µg/l | 0.012 | 10. | 0.91 | 1.7 | 3.4 |
| Molybdenum | µg/l | -- | -- | 20000. | 190000. | 370000. |
| Nickel | µg/l | 4600. | 200. | 170. | 1500. | 3000. |
| Nitrate+Nitrite | mg/l | -- | 100. | -- | -- | -- |
| Selenium | µg/l | 11000. | 50. | 5.0 | -- | -- |
| Total Dissolved Solids | mg/l | -- | -- | 1500. | -- | -- |
| Zinc | µg/l | 69000. | 25000. | 266.[B] | 410.[A] | 820.[A] |

[A] Total effective criteria based on application of dissolved metal translator.
[B] Biological Threshold Value

**Table 8B. Water Quality Criteria in the Study Area (Tuscarawas River model – Outfall 003)**

| | | Outside Mixing Zone Criteria | | | | Inside Mixing |
|---|---|---|---|---|---|---|
| | | Average | | | Maximum | Zone |
| Parameter | Units | Human Health | Agri-culture | Aquatic Life | Aquatic Life | Maximum |
| Aluminum | ug/l | -- | -- | -- | -- | -- |
| Ammonia-S | mg/l | -- | -- | 1.6 | -- | -- |
| Ammonia-W | mg/l | -- | -- | 4.6 | -- | -- |
| Arsenic | ug/l | -- | 100 | 150 | 340 | 680 |
| Barium | ug/l | -- | -- | 220 | 2000 | 4000 |
| Bis(2-ethylhexyl)phthalate | ug/l | 59c | -- | 8.4 | 1100 | 2100 |
| Boron | ug/l | -- | -- | 3900 | 33000 | 65000 |
| Chlorine - TRes | mg/l | -- | -- | 0.011 | 0.019 | 0.038 |
| Chromium - TR | ug/l | -- | 100 | 180 | 3900 | 7700 |
| Chromium VI - Diss | ug/l | -- | -- | 11 | 16 | 31 |
| Cobalt | ug/l | -- | -- | 24 | 220 | 440 |
| Dissolved solids (ave) | mg/l | -- | -- | 1500 | -- | -- |
| Fluoride | mg/l | -- | 2 | -- | -- | -- |
| Iron - TR | ug/l | -- | 5000 | -- | -- | -- |
| Magnesium | mg/l | -- | -- | -- | -- | -- |
| Manganese - TR | ug/l | -- | -- | -- | -- | -- |
| Molybdenum | ug/l | -- | -- | 20000 | 190000 | 370000 |
| Nickel - TR | ug/l | 4600 | 200 | 110 | 1000 | 2100 |
| Nitrate-N + Nitrite-N | mg/l | -- | 100 | -- | -- | -- |
| Phenolics | ug/l | -- | -- | -- | -- | -- |
| Selenium - TR | ug/l | 11000 | 50 | 5 | -- | -- |
| Sulfates | mg/l | -- | -- | -- | -- | -- |
| Sulfide | mg/l | -- | -- | -- | -- | -- |
| TKN | mg/l | -- | -- | -- | -- | -- |
| Zinc - TR | ug/l | 69000 | 25000 | 260 | 260 | 530 |

Table 9A. Instream Conditions and Discharger Flow (Hurford Run model – Outfall 001)

| Parameter | Units | Season | Value | Basis |
|---|---|---|---|---|
| Hurford Run | | | | |
| 7Q10 | cfs | annual | 0.49 | USGS gage #03117500, 1938-97 data |
| 1Q10 | cfs | annual | 0.46 | USGS gage #03117500, 1938-97 data |
| 30Q10 | cfs | summer | 0.60 | USGS gage #03117500, 1938-97 data |
| 30Q10 | cfs | winter | 1.20 | USGS gage #03117500, 1938-97 data |
| Harmonic Mean Flow | cfs | annual | 2.36 | USGS gage #03117500, 1938-97 data |
| Domer Ditch | | | | |
| 7Q10 | cfs | annual | 0.25 | USGS gage #03117500, 1938-97 data |
| 1Q10 | cfs | annual | 0.24 | USGS gage #03117500, 1938-97 data |
| 30Q10 | cfs | summer | 0.31 | USGS gage #03117500, 1938-97 data |
| 30Q10 | cfs | winter | 0.62 | USGS gage #03117500, 1938-97 data |
| Harmonic Mean Flow | cfs | annual | 1.21 | USGS gage #03117500, 1938-97 data |
| Mixing Assumption | % | average | 100. | Stream-to-discharge ratio |
| | % | maximum | 100. | Stream-to-discharge ratio |
| Instream Temperature | °C | summer | 25.3 | STORET; 8 values, 2003-05 |
| | | winter | 4.72 | USGS gage #03117100,1968-84 data |
| Instream pH | S.U. | summer | 8.00 | STORET; 8 values, 2003-05 |
| | | winter | 8.00 | STORET; 8 values, 2003-05 |
| Instream Hardness | mg/l | annual | 400. | STORET; 20 values, 1998-2006 |
| Background Water Quality for Hurford Run | | | | |
| Ammonia | mg/l | summer | 0.13 | STORET; 12 values, 2<MDL, 1998 |
| Ammonia | mg/l | winter | 0.08 | BWQR; 45 values, 16<MDL |
| Arsenic | µg/l | annual | 2. | STORET; 5 values, 2<MDL, 1998 |
| Barium | µg/l | annual | 73. | STORET; 12 values, 0<MDL, 1998 |
| Boron | µg/l | annual | 0. | No representative data available. |
| Chlorine, tot. res. | µg/l | annual | 0. | No representative data available. |
| Chromium, tot. | µg/l | annual | 0. | STORET; 12 values, 12<MDL, 1998 |
| Chromium$^{+6}$, diss. | µg/l | annual | 0. | No representative data available. |
| Cobalt | µg/l | annual | 0. | No representative data available. |
| Fluoride | µg/l | annual | 0. | No representative data available. |
| Lead | µg/l | annual | 1. | STORET; 12 values, 11<MDL, 1998 |
| Mercury | µg/l | annual | 0. | No representative data available. |
| Naphthalene | µg/l | annual | 0. | No representative data available. |
| Nickel | µg/l | annual | 0. | STORET; 12 values, 12<MDL, 1998 |
| Tetrachloroethylene | µg/l | annual | 0. | No representative data available. |
| TDS | mg/l | annual | 378. | STORET; 12 values, 0<MDL, 1998 |
| Zinc | µg/l | annual | 13. | STORET; 12 values, 4<MDL, 1998 |

Table 9A. Instream Conditions and Discharger Flow – continued.

| Parameter | Units | Season | Value | Basis |
|---|---|---|---|---|
| Background Water Quality for Domer Ditch | | | | |
| Arsenic | µg/l | annual | 0. | STORET; 3 values, 3<MDL, 1998 |
| Barium | µg/l | annual | 74. | STORET; 4 values, 0<MDL, 1998 |
| Boron | µg/l | annual | 0. | No representative data available. |
| Chlorine, tot. res. | µg/l | annual | 0. | No representative data available. |
| Chromium, tot. | µg/l | annual | 0. | STORET; 4 values, 4<MDL, 1998 |
| Chromium$^{+6}$, diss. | µg/l | annual | 0. | No representative data available. |
| Cobalt | µg/l | annual | 0. | No representative data available. |
| Fluoride | µg/l | annual | 0. | No representative data available. |
| Lead | µg/l | annual | 0. | STORET; 4 values, 4<MDL, 1998 |
| Mercury | µg/l | annual | 0. | No representative data available. |
| Naphthalene | µg/l | annual | 0. | No representative data available. |
| Nickel | µg/l | annual | 0. | STORET; 4 values, 4<MDL, 1998 |
| Tetrachloroethylene | µg/l | annual | 0. | No representative data available. |
| TDS | mg/l | annual | 490. | STORET; 4 values, 0<MDL, 1998 |
| Zinc | µg/l | annual | 0. | STORET; 4 values, 4<MDL, 1998 |
| Dissolved Metal Translators | | | | |
| Copper | | | 1.101 | OEPA, 5 values, 0<MDL,1998 |
| Lead | | | 1.423 | OEPA, 5 values, 0<MDL,1998 |
| Zinc | | | 1.083 | OEPA, 5 values, 0<MDL,1998 |
| Effluent Flows | | | | |
| Marathon Petroleum | | | | |
| Outfall 001 flow | cfs(mgd) | avg. annual | 2.92(1.89) | DSW |
| Timken Company | | | | |
| Outfall 015 flow | cfs(mgd) | avg. annual | 5.42(3.5) | DSW |

**Table 9B. Instream Conditions and Discharger Flow (Tuscarawas model – Outfall 003)**

| Parameter | Units | Season | Value | Basis |
|---|---|---|---|---|
| *Stream Flows* | | | | |
| 1Q10 | cfs | annual | 88.87 | USGS 03117000 + WWTP flows |
| 7Q10 | cfs | annual | 96.1 | USGS 03117000 + WWTP flows |
| | | summer | 0 | |
| | | winter | 0 | |
| 30Q10 | cfs | summer | 106.42 | USGS 03117000 + WWTP flows |
| | | winter | 136.34 | USGS 03117000 + WWTP flows |
| Harmonic Mean | cfs | annual | 234.36 | USGS 03117000 + WWTP flows |
| Mixing Assumption | % | average | 92.93242321 | |
| | % | maximum | 92.93242321 | |
| *Hardness* | mg/l | annual | 254 | STORET R06A02, N=7 |
| *pH* | S.U. | summer | 7.8 | STORET R06A02 |
| | | winter | 7.82 | STORET 601930 |
| *Temperature* | C | summer | 22.47 | STORET R06A02 |
| | | winter | 7.62 | STORET 601930 |
| *Marathon-Ashland Petroleum flow* | cfs | annual | 2.93 | 95th %ile |
| *Background Water Quality* | | | | |
| Aluminum | ug/l | | 558 | STORET; 2003-04; n=9; 1<MDL; mean value |
| Ammonia-S | mg/l | | 0.138 | *; 2003-10; n=39; 1<MDL; median value* |
| Ammonia-W | mg/l | | 0.39 | *; 2004-10; n=26; 0<MDL; median value* |
| Barium | ug/l | | 74.6 | STORET; 2003-04; n=9; 0<MDL; mean value |
| Bis(2-ethylhexyl)phthalate | ug/l | | 0 | No representative data available. |
| Boron | ug/l | | 0 | No representative data available. |
| Chlorine - TRes | mg/l | | 0 | No representative data available. |
| Chromium - TR | ug/l | | 0 | STORET; 2003-04; n=9; 9<MDL; All values < MDL |
| Chromium VI - Diss | ug/l | | 0 | No representative data available. |
| Cobalt | ug/l | | 0 | No representative data available. |
| Dissolved solids (ave) | mg/l | | 534 | STORET; 2003-04; n=10; 0<MDL; median value |
| Fluoride | mg/l | | 0 | No representative data available. |

| | | | |
|---|---|---|---|
| Iron - TR | ug/l | 1644 | STORET; 2003-04; n=9; 0<MDL; mean value |
| Magnesium | mg/l | 17.2 | STORET; 2003-04; n=9; 0<MDL; mean value |
| Manganese - TR | ug/l | 200 | STORET; 2003-04; n=9; 0<MDL; mean value |
| Molybdenum | ug/l | 0 | No representative data available. |
| Nickel - TR | ug/l | 0 | STORET; 2003-04; n=9; 9<MDL; All values < MDL |
| Nitrate-N + Nitrite-N | mg/l | 2.12 | STORET; 2003-04; n=10; 0<MDL; median value |
| Phenolics | ug/l | 0 | No representative data available. |
| Selenium - TR | ug/l | 0 | STORET; 2003-04; n=9; 9<MDL; All values < MDL |
| Sulfates | mg/l | 67.6 | STORET; 2003-04; n=10; 0<MDL; median value |
| Sulfide | mg/l | 0 | No representative data available. |
| TKN | mg/l | 0.94 | STORET; 2003-04; n=10; 0<MDL; median value |
| Zinc - TR | ug/l | 19 | STORET; 2003-04; n=9; 1<MDL; mean value |

Table 10A. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria for Outfall 001

| Parameter | Units | Average Human Health | Average Agri Supply | Average Aquatic Life | Maximum Aquatic Life | Inside Mixing Zone Maximum |
|---|---|---|---|---|---|---|
| Ammonia | mg/l | | | | | |
| LRW | | | | | | |
| summer | | -- | -- | -- | 15.6 | – |
| winter | | -- | -- | -- | 18.3 | – |
| MWH | | | | | | |
| summer | | -- | -- | 4.4 | -- | – |
| winter | | -- | -- | 11.4 | -- | – |
| WWH | | | | | | |
| summer | | -- | -- | 3.1 | -- | – |
| winter | | -- | -- | 11.4 | -- | – |
| Arsenic | µg/l | -- | 179. | 462. | 393. | 680. |
| Barium | µg/l | -- | -- | 528. | 2304. | 4000. |
| Boron | µg/l | -- | -- | 4554. | 38200. | 65000. |
| Chlorine, tot. res. | µg/l | -- | -- | 34. | 22. | 38. |
| Chromium$^{+6}$, diss.[B] | µg/l | -- | -- | 34.[A] | 19. | 31. |
| Chromium, tot.[B] | µg/l | -- | 181. | 315. | 6482. | 11000. |
| Cobalt | µg/l | -- | -- | 75. | 255. | 440. |
| Fluoride | µg/l | -- | 3616. | -- | -- | -- |
| Selenium | µg/l | 19890. | 90. | 16. | -- | -- |
| Total Dissolved Solids | mg/l | -- | -- | 1688. | -- | -- |
| Zinc | µg/l | 124800.[A] | 45200.[A] | 308.[C] | 473.[D] | 820.[D] |

[A] Allocation must not exceed the Inside Mixing Zone Maximum.
[B] Parameter would not require a WLA based on reasonable potential procedures, but allocation requested by permit staff.
[C] WLA based on a biological threshold value.
[D] WLA based on applicable dissolved metal translator.

**Table 10B. Summary of Effluent Limits to Maintain Applicable WQ Criteria (Tuscarawas model – 003)**

| | | Outside Mixing Zone Criteria | | | | Inside Mixing |
|---|---|---|---|---|---|---|
| | | Average | | | Maximum | Zone |
| Parameter | Units | Human Health | Agri-culture | Aquatic Life | Aquatic Life | Maximum |
| Aluminum | ug/l | -- | -- | -- | -- | -- |
| Ammonia-S | mg/l | -- | -- | -- | -- | -- |
| Ammonia-W | mg/l | -- | -- | -- | -- | -- |
| Barium | ug/l | -- | -- | 4652 | 56272 | 4000 |
| Bis(2-ethylhexyl)phthalate | ug/l | 4445 | -- | 264 | 32106 | 2100 |
| Boron | ug/l | -- | -- | 122774 | 963184 | 65000 |
| Chlorine (wwh,ewh, mwh,cwh) - TRes | mg/l | -- | -- | 0.35 | 0.55 | 0.038 |
| Chromium - TR | ug/l | -- | 7533 | 5667 | 113831 | 7700 |
| Chromium VI - Diss | ug/l | -- | -- | 346 | 467 | 31 |
| Cobalt | ug/l | -- | -- | 756 | 6421 | 440 |
| Dissolved solids (ave) | mg/l | -- | -- | 30944 | -- | -- |
| Fluoride | mg/l | -- | 151 | -- | -- | -- |
| Iron - TR | ug/l | -- | 254462 | -- | -- | -- |
| Magnesium | mg/l | -- | -- | -- | -- | -- |
| Manganese - TR | ug/l | -- | -- | -- | -- | -- |
| Molybdenum | ug/l | -- | -- | 629611 | 5545604 | 370000 |
| Nickel - TR | ug/l | 346533 | 15067 | 3463 | 29187 | 2100 |
| Nitrate-N + Nitrite-N | mg/l | -- | 7376 | -- | -- | -- |
| Phenolics | ug/l | -- | -- | -- | -- | -- |
| Selenium - TR | ug/l | 828666 | 3767 | 157 | -- | -- |
| Sulfates | mg/l | -- | -- | -- | -- | -- |
| Sulfide | mg/l | -- | -- | -- | -- | -- |
| TKN | mg/l | -- | -- | -- | -- | -- |
| Zinc - TR | ug/l | 5196582 | 1881919 | 7606 | 7053 | 530 |

Table 11A. Parameter Assessment for Outfall 001

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

| | | |
|---|---|---|
| Aluminum | Bromide | Cyanide, tot. |
| Magnesium | Manganese | Phenolic 4AAP |
| Phosphorus | Sulfate | Sulfide |

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

| | | |
|---|---|---|
| Chromium$^{+6}$, diss. | Chromium, tot. | Iron |
| Molybdenum | Nickel | Nitrate+Nitrite |
| Bis(2-ethylhexyl)phthalate | | |

Group 3: $PEQ_{max}$ < 50% of maximum PEL and $PEQ_{avg}$ < 50% of average PEL. No limit recommended, monitoring optional.

| | | |
|---|---|---|
| Arsenic | Boron | Cobalt |
| Zinc | | |

Group 4: $PEQ_{max} \geq$ 50% but <100% of the maximum PEL or $PEQ_{avg} \geq$ 50% but < 100% of the average PEL. Monitoring is appropriate.

| | |
|---|---|
| Ammonia – W | Barium |

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

Limits to Protect Numeric Water Quality Criteria

| Parameter | Units | Applicable Period | Recommended Effluent Limits Average | Maximum |
|---|---|---|---|---|
| Ammonia | mg/l | summer | 3.1 | -- |
| Chlorine, tot. res. | µg/lannual | | -- 22. | |
| Fluoride | µg/lannual | | 3616. -- | |
| Selenium | µg/lannual | | 16. -- | |
| Total Dissolved Solids | mg/l | annual | 1688. | -- |

**Table 11B. Parameter Assessment for Outfall 003**

---

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

| | | |
|---|---|---|
| Aluminum | Magnesium | Manganese - TR |
| Phenolics | Sulfates | Sulfide |
| TKN | | |

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

| | | |
|---|---|---|
| Bis(2-ethylhexyl)phthalate | Chromium - TR | Chromium VI - Diss |
| Iron - TR | Molybdenum | Nickel - TR |
| Nitrate-N + Nitrite-N | | |

*Group 3:* $PEQ_{max}$ < 50 percent of maximum PEL and $PEQ_{avg}$ < 50 percent of average PEL.
No limit recommended; monitoring optional.

| | | |
|---|---|---|
| Barium | Boron | Cobalt |
| Dissolved solids | Selenium - TR | Zinc - TR |
| Arsenic | | |

*Group 4:* $PEQ_{max}$ >= 50 percent, but < 100 percent of the maximum PEL or
$PEQ_{avg}$ >= 50 percent, but < 100 percent of the average PEL. Monitoring is appropriate.

Fluoride

*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 | Period | Average | Maximum |
| Chlorine - TRes | mg/l | | -- | 0.038 |

Table 12A. Final effluent limits and monitoring requirements for Marathon Petroleum outfall 3IG00000001 and the basis for their recommendation.

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | Concentration | | Loading (kg/day)[a] | | |
| Parameter | Units | 30 Day Average | Daily Maximum | 30 Day Average | Daily Maximum | Basis[b] |
| Flow | MGD | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Temperature | °C | -- | 37 | -- | -- | WQS |
| Dissolved Oxygen | mg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| $BOD_5$ | mg/l | 57 | 103 | 311 | 561 | AD/EP |
| COD | mg/l | 292 | 583 | 1589 | 3178 | AD/EP |
| Dissolved Solids | mg/l | 1688 | -- | 12075 | -- | WLA |
| Suspended Solids | mg/l | 46 | 72 | 249 | 391 | AD/EP |
| Ammonia-N | mg/l | | | | | |
| Summer | | 3.6 | 15.6 | 19.6 | 112 | AD/EP, WLA |
| Winter | | 11.4 | 18.3 | 81.6 | 131 | WLA |
| Phosphorus | mg/l | 1.0 | 1.5 | 1.70 | 2.55 | TMDL |
| Oil and Grease | mg/l | 15 | 20 | 81.8 | 109 | AD/EP |
| Fluoride, T. | mg/l | 3.2 | -- | 20.22 | -- | AD/EP |
| Sulfide | mg/l | 0.3 | 0.67 | 1.63 | 3.67 | AD/EP |
| pH | S.U. | - - - - - - - - - - - - - | 6.5 to 9.0 | - - - - - - - - - - - - - | | WQS |
| E. coliform | #/100ml | | | | | |
| Summer | | 161 | 362 | -- | -- | WQS |
| Chlorine Residual | mg/l | -- | 0.022 | -- | -- | WLA |
| Barium, T. R. | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M/RP[c] |
| Chromium, T. R. | µg/l | 117 | 991 | 0.64 | 5.41 | AD/EP |
| Hex. Chromium (Dissolved) | µg/l | 13 | 17 | 0.071 | 0.093 | AD/EP |
| Mercury, T. | ng/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Selenium, T. R. | µg/l | 16 | -- | 0.11 | -- | WLA |
| Phenolics, T. | µg/l | 165 | 330 | 0.9 | 1.8 | AD/EP |
| Whole Effluent Toxicity | | | | | | |
| Acute | TUa | - - - - - - - - | Monitor (w/o trigger) | - - - - - - - - - - | | WET |
| Chronic | TUc | - - - - - - - - | Monitor (w/o trigger) | - - - - - - - - - - | | WET |

Table 12A. Con't.

[a] Effluent loadings for total dissolved solids, ammonia (summer max.), ammonia (winter) and selenium are based on a discharge flow of 1.89 MGD. Effluent loadings for fluoride are based on a discharge flow of 1.67 MGD. Concentrations and loadings for BOD, COD, TSS, oil&grease, sulfide, phenolics, chromium and hexavalent chromium are based on a discharge flow of 1.44 MGD.

[b] Definitions: AD = Antidegradation (OAC 3745-1-05); EP = Existing Permit; M = Monitoring; RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in NPDES permits (3745-33-07(A)); TMDL = Total Maximum Daily Load for the Nimishillen Creek watershed; WET = Whole Effluent Toxicity (OAC 3745-33-07(B)) ; WLA = Wasteload Allocation procedures (OAC 3745-2); WLA/IMZM = Wasteload Allocation limited by Inside Mixing Zone Maximum; 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 12B. Final effluent limits and monitoring requirements for Marathon Petroleum outfall 3IG00000003 and the basis for their recommendation.

| | | Effluent Limits | | | | |
|---|---|---|---|---|---|---|
| | | Concentration | | Loading (kg/day)[a] | | |
| Parameter | Units | 30 Day Average | Daily Maximum | 30 Day Average | Daily Maximum | Basis[b] |
| Flow | MGD | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Temperature | °C | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Dissolved Oxygen | mg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| $BOD_5$ | mg/l | 29 | 55 | 244 | 455 | AD/EP |
| COD | mg/l | 191 | 382 | 1589 | 3178 | AD/EP |
| Dissolved Solids | mg/l | 4000 | -- | 33312 | -- | AD/EP |
| Suspended Solids | mg/l | 24 | 38 | 197 | 314 | AD/EP |
| Ammonia-N | mg/l | | | | | |
| Summer | | 3.6 | 25.2 | 30 | 180 | AD/EP, WLA |
| Winter | | -- | 26.4 | -- | 188 | WLA/IMZM |
| Phosphorus | mg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Oil and Grease | mg/l | 9 | 13 | 73 | 109 | AD/EP |
| Fluoride, T. | mg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M/RP[c] |
| Sulfide | mg/l | 0.13 | 0.29 | 1.12 | 2.44 | AD/EP |
| pH | S.U. | - - - - - - - - - - - - - | 6.5 to 9.0 | - - - - - - - - - - - - - | | WQS |
| E. coliform | #/100ml | | | | | |
| Summer | | 126 | 284 | -- | -- | WQS |
| Chlorine Residual | mg/l | -- | 0.038 | -- | -- | WLA/IMZM |
| Chromium, T. R. | µg/l | 77 | 650 | 0.64 | 5.41 | AD/EP |
| Hex. Chromium (Dissolved) | µg/l | 9 | 11 | 0.071 | 0.093 | AD/EP |
| Mercury, T. | ng/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Selenium, T. R. | µg/l | - - - - - - - - - - - - | Monitor | - - - - - - - - - - - - - - - | | M[c] |
| Phenolics, T. | µg/l | 108 | 216 | 0.9 | 1.8 | AD/EP |
| Whole Effluent Toxicity | | | | | | |
| Acute | TUa | - - - - - - - - | Monitor (w/o trigger) | - - - - - - - - - - | | WET |

Table 12B. Con't.

[a] Effluent concentrations and loadings based on average design discharge flow of 2.2 MGD, except ammonia(winter) which is based on 1.89 MGD.

[b] Definitions: AD = Antidegradation (OAC 3745-1-05); EP = Existing Permit; M = Monitoring; RP = Reasonable Potential for requiring water quality-based effluent limits and monitoring requirements in NPDES permits (3745-33-07(A)); WET = Whole Effluent Toxicity (OAC 3745-33-07(B)) ; WLA = Wasteload Allocation procedures (OAC 3745-2); WLA/IMZM = Wasteload Allocation limited by Inside Mixing Zone Maximum; 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.

Attachment – Effluent Guideline Calculations for Marathon Petroleum

Marathon Petroleum - Process Configuration

| Process | Capacity (1000 barrels) | Capacity Ratio | Weighting Factor | Process Config. |
|---|---|---|---|---|
| **Crude Processing** | | | | |
| Atmospheric Distillation | 86.8 | 1 | | |
| Vacuum Distillation | 36.9 | 0.425 | | |
| Crude Desalting | 86.8 | 1 | | |
| Sum | | 2.425 | 1 | 2.425 |
| | | | | |
| **Cracking & Coking** | | | | |
| Fluid Catalytic Cracking | 26.1 | 0.301 | | |
| Hydrotreating | 86.4 | 0.995 | | |
| Sum | | 1.296 | 6 | 7.776 |
| | | | | |
| **Asphalt Processes** | | | | |
| Asphalt Production | 1.4 | 0.016 | 12 | 0.194 |
| | | | | |
| **Reforming/Alkylation** | | | | |
| Catalytic Reforming | 21.6 | 0.249 | | |
| Sum | | 0.249 | 0 | 0.000 |
| **Total Process Configuration** | | | | 10.395 |
| | | | | |
| Capacity (1000 barrels) | 86.8 | | | |
| Process Factor | 1.89 | | | |
| Size Factor | 1.13 | | | |

Marathon Petroleum - Applicable BCT/BAT limits

| | | *Process Wastewater* 419.23-24 lbs./1000 barrels thru | | Limits w/o storm kg/day | | Limits inc. storm kg/day | |
|---|---|---|---|---|---|---|---|
| **Parameter** | | **30-day** | **Daily** | **30-day** | **Daily** | **30-day** | **Daily** |
| BOD5 | | 5.5 | 9.9 | 463.4469 | 834.20442 | 503.447 | 906.932 |
| TSS | | 4.4 | 6.9 | 370.75752 | 581.415202 | 403.485 | 632.324 |
| Oil&grease | | 1.6 | 3 | 134.820916 | 252.789218 | 147.003 | 276.426 |
| COD | | 38.4 | 74 | 3235.70199 | 6235.46738 | 3508.429 | 6780.922 |
| Ammonia | | 3 | 6.6 | 252.789218 | 556.13628 | 252.789 | 556.136 |
| Sulfide | | 0.029 | 0.065 | 2.444 | 5.477 | 2.444 | 5.477 |
| Phenolics | | | | | | | |
| crude | | 0.003 | 0.013 | 0.118 | 0.513 | | |
| cracking | | 0.036 | 0.147 | 1.420 | 5.800 | | |
| asphalt | | 0.019 | 0.079 | 0.012 | 0.050 | | |
| reforming/alkylation | | 0.032 | 0.132 | 0.314 | 1.296 | | |
| | sum | | | 1.865 | 7.659 | 2.120 | 8.186 |
| Chromium | | | | | | | |
| crude | | 0.004 | 0.011 | 0.158 | 0.434 | | |
| cracking | | 0.041 | 0.119 | 1.618 | 4.695 | | |
| asphalt | | 0.022 | 0.044 | 0.014 | 0.028 | | |
| reforming/alkylation | | 0.037 | 0.107 | 0.363 | 1.051 | | |
| | sum | | | 2.153 | 6.208 | 2.480 | 7.117 |
| Hexavalent chromium | | | | | | | |
| crude | | 0.0003 | 0.0007 | 0.012 | 0.028 | | |
| cracking | | 0.0034 | 0.0076 | 0.134 | 0.300 | | |
| asphalt | | 0.037 | 0.064 | 0.024 | 0.041 | | |
| reforming/alkylation | | 0.0031 | 0.0069 | 0.030 | 0.068 | | |
| | sum | | | 0.200 | 0.436 | 0.242 | 0.530 |

Marathon Petroleum - Applicable BCT/BAT limits

| | *Storm water* 419.23-24 lbs./1000 gallons | | Storm water limits kg/day | |
|---|---|---|---|---|
| | **30-day** | **Daily** | **30-day** | **Daily** |
| BOD5 | 0.22 | 0.4 | 40.000 | 72.727 |
| TSS | 0.18 | 0.28 | 32.727 | 50.909 |
| Oil&Grease | 0.067 | 0.13 | 12.182 | 23.636 |
| COD | 1.5 | 3 | 272.727 | 545.455 |
| Phenolics | 0.0014 | 0.0029 | 0.255 | 0.527 |
| Chromium | 0.0018 | 0.005 | 0.327 | 0.909 |
| Hexavalent chromium | 0.00023 | 0.00052 | 0.042 | 0.095 |

| | |
|---|---|
| Capacity (1000 barrels) | 86.8 |
| Process Factor | 1.89 |
| Size Factor | 1.13 |
| Storm water flow (MGD) | 0.4 |

Ohio EPA
40 years and moving forward
John R. Kasich, Governor
Mary Taylor, Lt. Governor
Scott J. Nally, Director

January 2, 2013

Richard D. Bedell, Senior Vice-President
Marathon Petroleum Company LLC
539 South Main Street
Findlay, OH 45840-3295

Dear Mr. Bedell

In response to your comments we have made several changes to the draft NPDES permit for the Canton refinery before issuing the permit final. Responses to all of your comments are provided below.

Overall Concerns

Marathon Petroleum Company (MPC) enjoys an excellent working relationship with the Surface Water Inspectors and Managers from the Agency's Northeast District Office. As stated at the June 8, 2011 meeting, MRC believes that instead of imposing stringent, prohibitively expensive limits for total dissolved solids (TDS), selenium and phosphorus on an outfall that discharges to a channelized storm water control drainage way, the Agency and MPC should focus their collective efforts on selecting and implementing stream habitat improvement projects consistent with the recommendations in Ohio EPA-approved action plans developed by the Northeast Ohio Four County Regional Planning and Development Organization (NEFCO) for Hurford Run and Nimishillen Creek. MPC offers to partner with the NEDO staff and NEFCO representatives to implement portions of these action plans, which the Refinery believes will be far more effective and timely at improving biological scores and overall aquatic health in both streams.

The capital cost needed to meet the proposed new limits for these parameters through additional treatment is in excess of $75 million, with annual O&M costs of several million dollars. Even if MPC were to address the new limits by moving its outfall to a larger stream, the Refinery is facing at least an additional capital cost of $27.5 million for the 10.8-mile pipeline and pump station, in addition to the $7 million already spent to obtain easements/rights of way for the land.

The Canton refinery is a very small, older refinery by comparison, built in 1931. Its current output is only 78,000 barrels per day, and its maximum throughput capacity is about 84, 500 barrels per day. The Refinery has had a negative cash flow for three of the past four years due primarily to capital expenses made for regulatory requirements. Since 1999, the Refinery has spent $327.6 million (>81% of all capital investments over this period) on pollution control equipment just to meet new regulatory requirements. Over the next five years, the Refinery is projecting to spend another $127 million on regulatory investments. The Refinery could also face other significant, non-budgeted regulatory investments for low-sulfur gasoline and inherently safer technology mandates during this period.

The Canton Refinery has invested significant capital in a very sophisticated wastewater treatment plant. The plant includes two dissolved air flotation units and a large equalization tank, biological treatment, and tertiary treatment consisting of both sand and carbon filters. In the last three years alone, the Refinery has invested an additional $8.55 million to make further improvements to the wastewater treatment plant:

- Installation of new heat exchangers to reduce effluent temperature, which also enabled the plant to better cultivate nitrifier bacteria to further reduce ammonia discharges; and

- Installation of an acid soluble oil washer in the HF Alkylation Unit to remove fluorides.

These latest upgrades should improve biological index scores downstream of the discharge. However, due to significant unexpected increases in cost, MPC has delayed relocation outfall 001 to the Tuscarawas River, a distance of 10.8 miles. The preliminary cost of moving the outfall was believed to be only about $1 million per mile. While the refinery appreciates the suggestions of NEDO staff that led to this permit option, after spending more than $7 million just to obtain easements, the cost of moving the outfall has ballooned to almost $34.5 million, more than three times the original estimate.

It is with these economic concerns and overall objectives in mind that MPC offers its comments on the draft permit renewal permit. The following comments are arranged roughly in order of importance and estimated economic impact on the Refinery's operations. MPC would welcome the opportunity to talk further with the Agency and its staff, before the permit goes final, to see if we can agree on an action plan that meets

the Agency's objectives for stream improvement and avoids the need for significant capital expenditures at the Refinery.

Response: We believe that our discussions have produced a good permit that addresses MPC's concerns and meets all NPDES requirements. The new discharge point to the West Branch of Nimishillen Creek (Outfall 004) should allow WQS to be met without expensive treatment upgrades. We appreciate MPC's willingness to work on the alternate solutions contained in the permit.

Specific Comments

Comment: With respect to the proposed TDS limit, the fact sheet indicates the proposed limit is based upon a reasonable potential for exceedance of the WQS for TDS (1500 mg/l) in the receiving stream, Hurford Run. The fact sheet also indicates that the proposed numeric TDS limit is calculated based on the 7Q10 flow in Hurford Run. However, the 3.24 mile segment of Hurford Run into which Outfall 001 discharges is designated as Limited Resource Water, and is specifically designated so due to its role for "small drainage way maintenance". These streams are highly modified surface water drainage ways that do not possess the stream morphology or habitat characteristics necessary to support any other aquatic life habitat use.

In recognition of the limited capabilities of LRW streams, Ohio EPA limits the WQS that apply to these streams. Water quality standards applied as outside mixing zone averages (other than dissolved oxygen, pH and temperature) do not apply to LRW streams. TDS is a WQS that applies only as an OMZA; therefore it does not apply to this segment of Hurford Run.

If the basis for the proposed TDS limit is avoidance of a potential exceedance of WQS in downstream segments of Hurford Run, which have higher use designations, that basis is not set forth in the fact sheet, which must by law contain an explanation or summary of the basis/calculations showing how the TDS limit was derived.

If protecting the lower segments of Hurford Run from a potential exceedance is the basis for the proposed TDS limit, the mass balance allocated with the Refinery's proposed TDS limit is inequitable compared to the TDS loading that Timken Steel discharges downstream from the

Refinery's outfall. Timken Steel currently has no TDS concentration or loading limit, and discharges as much as 18.5 tons per day, compared to the TDS loading of 13.3 tons per day that Ohio EPA proposes for the Refinery.

In addition, the TDS that the Refinery discharges is removed from the stream through a combination of biological, chemical and physical means, as evidenced by the Agency's determination that background TDS concentrations measured during low-flow conditions in Hurford Run, just upstream of Domer Ditch's confluence and downstream in the last 0.8 mile segment of the stream are only approximately one-third of the WQS, despite loadings coming from the Refinery and Timken Steel. This indicates that Hurford Run has assimilative capacity based on more than just simple dilution using discharger flow and loadings, and critical stream flow and background values.

The Refinery is unaware of any stream data collected by Ohio EPA on the lowest 0.8 mile, WWH-designated segment of Hurford Run showing elevated TDS levels anywhere close to WQS, regardless of whether collected during regular flow conditions or under late summer drought conditions. It appears that the "reasonable potential" decision was made based on a calculated mass balance equation without data collected from the stream to verify and confirm the validity of the calculation, and verify the assumptions about assimilative capacity that are part of the calculation. In a situation like this, where millions of dollars of capital investment are at stake, the "reasonable potential" decision should be based on more than a calculation, and should be verified by actual stream flow and pollutant data from the segment whose "potential" is being protected.

If the Refinery's effluent limits are not to be based on the designation of the stream into which the Refinery discharges, but are to be made based on stream designations multiple segments downstream and at least a mile away from the location of the outfall, then the lower quality LRW and MWH use designations assigned by Ohio EPA to the upper and middle segments of the stream, respectively, are of no real benefit for the Refinery or Timken Steel. Where does protection of downstream segments end? Obviously, the further away from the outfall the analysis goes, the greater the impact of intervening point and non-point sources and various removal processes, thus making "reasonable potential"

decisions tenuous at best without actual data from the downstream segments. That is why both the Ohio EPA and U.S. EPA manuals for performing wasteload modeling recommend that modeling calculations that lead to allocations for permit holders are verified through collection of actual stream flow and pollutant data. It does not appear that the modeling proposed for the proposed TDS limit was confirmed or verified with any flow or pollutant data from the downstream 0.8-mile segment of Hurford Run.

The proposed TDS limit is also over-protective of the downstream, WWH-designated segment of Hurford Run. The proposed limit is based on a simple mass balance dilution calculation during low-flow conditions, and applied year-round. This stringent limit would apply at all times to protect a drought flow that is expected to occur for 7 days every 10 years. The very limited environmental benefit expected from imposing the proposed TDS limit is speculative at best, and must be balanced against the significant cost of installing and operating an RO unit, or piping the outfall over 10 miles to a larger receiving water.

In addition, the 1500 mg/l WQS applies as an average over some period, presumably a month. However, the TDS limit was not developed in that manner. Instead, it was set at a numeric value that guarantees that the WQS will never be exceeded at any time in the last 0.8-mile segment of Hurford Run, which is inconsistent with the TDS standard being an average limit. Without instream TDS data for the last 0.8-mile segment, Ohio EPA can not accurately determine how much higher the TDS concentration can be without potentially causing instream concentrations in the last segment of Hurford Run to begin exceeding a monthly average of 1500 mg/l. This is another reason why the simplified modeling method needs to be verified by actual downstream flow and pollutant data, particularly where, as here, significant capital expenditures are at stake.

Finally, MPC notes that NEFCO's Ohio-EPA approved action plans for Hurford Run and Nimishillen Creek both identify stream bed/bank and habitat/canopy improvements as the principal recommendations to improve the quality of both streams, not the reduction of TDS loadings.

For all of these reasons, the Refinery requests that Ohio EPA delete the proposed numeric TDS limit from the final permit.

Response: We recognize that the TDS standard does not apply in the segment of Hurford Run designated as Limited Resource Water. The wasteload allocation for MPC was set to protect the Modified Warmwater Habitat and Warmwater Habitat segments downstream of Domer Ditch. TDS was allocated to both MPC and Timken Company (which discharges primarily to Domer Ditch). The NPDES fact sheet for MPC contained the background data used to do this allocation in Tables 8A and 9A. Wasteload allocation calculations can be reproduced using this data.

In this wasteload allocation, MPC receives a higher concentration wasteload than Timken. Timken received an allocation of 1500 mg/l because (1) this is the water quality standard for all use designations other than LRW, and (2) Domer Ditch is designated Warmwater Habitat, and has essentially no background flow during critical conditions. Timken's loading allocation is higher than Marathon's because Timken discharges approximately three times the flow that MPC does. The Timken permit does not contain a TDS limit because Timken does not have the reasonable potential to contribute to TDS exceedances, based on a comparison of Timken's effluent quality to the wasteload allocation.

MPC received an allocation of 1688 mg/l for the discharge to Hurford Run. This reflects the dilution capacity of Hurford Run. The flow of Domer Ditch can not be used as dilution because it is allocated up to WQS because of the Timken discharge.

The background quality for TDS presented in the Fact Sheet is a median value of measurements taken in Hurford Run upstream from MPC, not downstream. Ohio EPA has only three old data points from Hurford Run just upstream of Domer Ditch (1998 data). We acknowledge that additional dilution was probably occurring at this time, but Agency sampling protocols allow sampling any time flows are within five times the 7Q10 flow, while wasteload allocations are done at critical low flows. It is therefore likely that additional dilution flows were occurring during the 1998 sampling.

Data taken at the mouth of Hurford Run show TDS concentrations ranging from 920 – 1520 mg/l (11 sample results in the last 10 years). These concentrations are well above usual background concentrations in Ohio streams, and indicate the possibility that TDS water quality standard may be exceeded at times.

Ohio EPA looks at distance and, in some cases, effluent time-of-travel, when determining whether an allocation needs to protect a downstream use. In this case, the MPC discharge is only 0.2 miles upstream of the Modified Warmwater Segment. Under critical conditions, there would be essentially no dilution between these two points other than the Timken effluent. With poor habitat conditions and no additional flow, it is reasonable to conclude that there is no assimilation or dilution of TDS in this short distance.

It is common to set limits for downstream segments using mass-balance equations for pollutants that do not degrade in stream, particularly in cases like this where the downstream segment is a short distance from the outfall. The calibration requirements that you cite apply to models for pollutants that degrade in-stream, such as oxygen-demanding pollutants; these pollutant degradation models are the ones that require calibration because they depend on pollutant degradation rates as well as dilution.

Ohio EPA typically sets allocations based on critical low flows for continuous dischargers. Ohio rules require that we do this [OAC 3745-2-05(A)]. We use seasonal critical flows if there are effluent characteristics that are different during different seasons, or if WQS change with the seasons (as we did with MPC's ammonia allocation). If Marathon presents information that indicates changes in flows or loadings with various seasons, Ohio EPA would consider using a seasonal low-flow to develop limits.

The permit does not apply the TDS limit as a not-to-be-exceeded limit. The TDS limit is listed as a 30-day average. In addition, the Agency used a weekly critical low-flow (7Q10) in developing limit. The use of this average flow indicates clearly that this is not a maximum limit.

As a result, we still believe that the discharge has the reasonable potential to contribute to excursions above the WQS. Limits remain in the permit, and will apply at the end of the compliance schedule unless MPC chooses a different compliance alternative. With the planned relocation of the discharge point to the West Branch of Nimishillen Creek, and the associated higher TDS limit, we believe that MPC should be able to meet WQS.

Comment: The fact sheet for the draft permit indicates that the new proposed numeric selenium limit is based upon a reasonable potential for exceedance of the instream WQS for selenium in Hurford Run. However, like TDS, selenium is a WQS that applies only as an OMZA. Thus, under OAC 3745-1-07(A)(4)(b), the selenium WQS does not apply to the 3.25 mile segment of Hurford Run into which outfall 001 discharges.

In addition, fact sheets issued with the Refinery's 2009 permit modification and 2005 permit renewal both classified selenium as a group 3 parameter, and thus the permits imposed only a monitoring requirement without a limit. To the best knowledge of the Refinery's staff, there has not been any recent change in any process or raw materials that would have significantly increased the concentration of selenium in the discharge. A quick review of the database of selenium values summarized in the fact sheet indicates that there may have been outlier data points for selenium that should have been rejected before the values were ranked and the projected effluent quality (PEQ) value determined. MPC requests that the Agency reexamine the database to see if any of the values are more than two standard deviations away from the average value, which means they can be rejected as outliers with a confidence level of at least 95%.

MPC also reviewed the TMDL report for Nimishillen Creek and NEFCO's action plans for both Hurford Run and Nimishillen Creek, and did not find any indication of selenium-induced impairment. In fact, the chemical survey data collected for selenium for the TMDL report showed all samples collected in various segments of Nimishillen Creek as below detection limits. Thus, there is no separate reason to believe that outfall 001 is contributing to a downstream exceedance of the selenium WQS.

Finally MPC understands that the selenium WQS has existed for several decades, but only infrequently is applied in permits as a numeric limit. A review of other industrial permits in the Nimishillen Creek basin did not uncover any permits with numeric selenium limits. BP's refinery in Lucas County has only a monitoring requirement for selenium. In addition, a review of U.S. EPA's electronic database of discharge permits/limits shows that permits issued for refineries in Kentucky, West Virginia and Pennsylvania also have, at most, monitor only requirements for selenium.

The cost to remove selenium sufficient to meet the stringent proposed monthly average limit of 16 ug/l would require installation of chemical

addition, precipitation, and settling equipment, at a capital cost of approximately $35-40 million. In addition, there would not be any significant biological improvement in Hurford Run due to its widespread use for stormwater conveyance and flood control. For much the same reason reasons as explained with respect to the proposed TDS limit, MPC believes that a selenium limit is not supported by a sufficient reasonable potential determination, and that imposing such a limit is economically unreasonable, particularly when compared to the absence of any demonstrated biological improvement to be gained by imposing the limit. Therefore, MPC requests that Ohio EPA delete the numeric limit from the final permit and leave selenium as a monitoring only parameter.

Response: Like TDS, the selenium allocation is set to protect the Modified Warmwater segment of Hurford Run (0.2 miles downstream of the MPC outfall). In this allocation, MPC received dilution from Hurford Run, Domer Ditch and Timken Company because Timken's effluent data has not shown detections of selenium.

We reviewed the effluent PEQ data again for outliers. Using the log-normal distribution recommended by U.S. EPA, we found 3 low data points that could qualify as outliers using the two-standard-deviation method that you described. Even with these data points eliminated, the PEQavg statistic decreases only to 43 ug/l, which still represents a reasonable potential to contribute to excursions of criteria in the downstream MWH segment.

Ohio EPA has collected selenium data from Hurford Run at the mouth over the last 10 years. Of the eleven samples collected, five results showed detectable selenium, and two of these showed values above the average water quality criterion.

While other dischargers in the Nimishillen Creek watershed have been allocated selenium, notably the Canton and Louisville WWTPs, none of these dischargers has effluent concentrations high enough to have the reasonable potential to contribute to excursions of water quality criteria.

It is possible that other petroleum refineries do not have permit limits for selenium. In our review of Ohio refineries, all refineries discharge selenium at some concentration. The measure of whether the discharge has reasonable potential is more the size of the receiving water than the

specific level of selenium in the discharges. Discharges to relatively small streams trigger reasonable potential because their wasteload allocations are low; dischargers to larger water bodies do not trigger reasonable potential because there is sufficient volume in the receiving water to dilute selenium to meet WQS. Among Ohio refineries, MPC and Lima Refining Company discharge to small streams and have selenium limits in their permits; the BP/Husky refinery, which discharges to Lake Erie, does not trigger reasonable potential. We wonder if the refineries cited in Kentucky, West Virginia and Pennsylvania discharge to waterbodies large enough to dilute the selenium. It is our understanding that all four states have the same water quality standard.

Comment: The draft permit imposes for the first time a stringent 1.0 mg/l average limit for phosphorus. The proposed new limit does not contain a compliance schedule. Previous permits issued to MPC did not contain a monitoring requirement for phosphorus, so there are only a few data points from which the Refinery can assess its ability to consistently meet the proposed limit. That data indicates that the Refinery can not meet the new limit consistently without installing additional treatment.

The fact sheet indicates that the basis for the proposed numeric limit is the TMDL report for Nimishillen Creek. Yet, despite a detailed review of the report, MPC can not find any statement indicating the Refinery is a source of phosphorus-based impairment in Nimishillen Creek. On page 99 of the report it states that the phosphorus load from the Refinery is at most 1% of the total phosphorus load coming into Nimishillen Creek. Perhaps more importantly, the report indicates that the Louisville and Canton POTWs are responsible for at least 95% of the phosphorus loading into Nimishillen Creek. The Refinery understands that both cities received new permits in May 2010 with the new phosphorus limits designed to address the stream impairment. Finally, page 50 of the report indicates that Ohio EPA's instream target value for phosphorus is being met in Nimishillen Creek where Hurford Run joins, but then increases dramatically downstream of the City of Canton's discharge, consistent with the large phosphorus loading from the POTW.

The TMDL report admittedly recommends on page 70 that a phosphorus limit be imposed for all major dischargers in the basin. But Ohio EPA's TMDL rule and its rules for establishing water quality based effluent limits do not permit the Agency to impose stringent numeric WQBELs without

supporting evidence that the discharger is a significant contributor to downstream impairment, and/or has the "reasonable potential" to cause or contribute to exceedance of applicable WQS.

Importantly, the TMDL report states on page 69 that the only basis for the recommended limit for the Refinery is Ohio EPA's belief that the Refinery can already meet the limit without additional treatment. But the Refinery's existing data shows that the limit can not be consistently met without installing additional treatment. In addition ORC 6111.12 bars the Agency from imposing limits based on existing effluent quality. In addition, there is no separate authority that MPC is aware of that supports a policy that all permit holders in an impaired basin "share the pain equally" even when their discharge is an insignificant source of the document impairment.

Ohio EPA's TMDL rule and existing TMDL policy also require that Ohio EPA impose the recommendations from a TMDL report in iterative stages, addressing the most significant, demonstrated sources of impairment first, assessing the impact thereof, and then determining whether and what further or new recommendations to implement [OAC 3745-2-12(E) and TMDL policy documents available on the Ohio EPA web site]. But that was not done here. The combination of new phosphorus limits for the two cities responsible for 95+% of the phosphorus loading; recommended septic system improvements; and recommended stream/habitat improvements must be given sufficient time to be implemented and their impacts on biological scores assessed, before determining whether *de minimis* sources like the Refinery must have a limit.

Preliminary cost estimates to treat outfall 001 in order to consistently comply with the proposed phosphorus limit would require the installation of chemical addition, precipitation and settling equipment, at a capital cost of several million. And there would not be any significant biological improvement in Nimishillen Creek because the Refinery is an insignificant source of phosphorus loading. Under these circumstances, MPC believes that a numeric phosphorus limit is not only unsupported by the TMDL report, but is also economically unreasonable. Therefore, MPC requests that Ohio EPA delete the numeric limit from the final permit and add phosphorus monitoring only at a frequency of 1/quarter.

Response: Ohio EPA's more detailed review of the Nimishillen Creek TMDL indicates that the phosphorus TMDL requirements were directed only at the largest

public treatment plants in the watershed. As a result, we have removed the phosphorus limit in the draft permit. The monitoring frequency has been changed from 1/week to 1/month.

Comment: The draft renewal permit proposes daily maximum and monthly average limits for E coli. of 362 and 161 counts/100ml, respectively, derived from Ohio's new criteria for protection of recreational waters. The fact sheet states that the limits are based on Hurford Run being a primary contact recreation (PCR) Class B stream. However, MPC believes that the wrong limits were imposed based on the incorrect designation for Hurford Run.

Under OAC 3745-1-24, Hurford Run is designated as secondary contact recreation (SCR). Under Ohio's new recreation criteria, SCR streams are defined as waters rarely used for recreation because they have small drainage areas, minimal depth, limited access, and thus don't provide for "full body immersion". These factors clearly apply to Hurford Run. MPC requests that Ohio EPA replace the proposed limits with the limits applicable to SCR streams.

The refinery has no database from which to evaluate the ability to consistently meet the limit. Therefore, MPC requests that the final permit contain a 12-18 month compliance schedule so that data can be collected and, if necessary, additional treatment installed. In the alternative, a compliance schedule can afford time for the Refinery to determine if further steps can be taken to guard against sanitary being sent to the treatment plant, in exchange for Ohio EPA agreeing to remove the proposed limit.

In addition, we request that the footnotes be changed to clearly set the monitoring frequency to 1/week during discharges of sanitary wastewater.

Response: The e. coli. limits are based on the Primary Contact, Class B, use designation of Hurford Run downstream of Domer Ditch. Given the short distance between MPC's outfall and Domer Ditch, we do not believe that the water quality standards for Secondary Contact Recreation will protect the Class B use.

Because our main concern with respect to bacteria is with the sanitary wastewater (not normally discharged into the refinery wastewater system), we agree to apply these limits only when sanitary wastewaters are

discharged to the process wastewater treatment system. We have clarified that the monitoring frequency is 1/week.

Comment: MPC's 2005 permit imposed chlorine residual monitoring as a once per quarter single grab for the first three years of the permit, then deleted the monitoring requirement for the remainder of the permit term. The refinery's 2009 permit modification had no monitoring requirement or limit for chlorine residual. The fact sheet issued with the 2009 permit modification stated that chlorine residual effluent data reported by the Refinery warranted a group 5 category, but that a limit and monitoring were not included because the reliability of the effluent data submitted during the first 3 years of the 2005 permit was suspect, and because the Refinery treated outfall 001 with carbon, thus removing any residual chlorine. Yet the current draft permit proposes a stringent daily maximum limit of 0.022 mg/l for chlorine residual, monitored as a daily multiple grab sample, and effective immediately when the draft permit is issued. This makes no sense to MPC. If the effluent data reported from 2005-08 was unreliable, why is a limited needed now?

Most of the chlorine residual that has been detected from time to time in the outfall is from a sodium hypochlorite solution added to control potential bacterial/algal growth in the heat exchanger lines for the cooling towers. A small amount also comes from the municipal water supply, which is used as make-up cooling water and as refinery work water. When leaks occur in the heat exchanger lines, sodium hypochlorite solution enters the blowdown stream that is conveyed to the treatment system. Importantly, U.S. EPA promulgated an amended MACT rule for heat exchange systems for petroleum refineries that will require the Refinery to modify the heat exchanger system to reduce the potential for leaks, install enhanced monitoring and leak detection, repair leaks within specified time periods after they are detected, and comply with enhanced reporting and recordkeeping for leaks and monitoring systems. These requirements should reduce the number and duration of leaks that contribute chlorine residual to the wastewater stream.

For these reasons, MPC requests that the final permit maintain the monitoring only requirement for chlorine residual during this permit cycle. The monitoring frequency should be set at once every two weeks.

Response: We believe that chlorine limits are needed for those times that chlorine is added to the wastewater treatment system. Because chlorine is only added when the sanitary wastewater is discharged into the process wastewater treatment system, we agree to apply these limits and monitoring requirements only when sanitary wastewaters are discharged to the process wastewater treatment system. We have set the monitoring frequency at 1/week to match the e. coli. monitoring frequency.

Comment: The fact sheet demonstrates that outfall 001 has been consistently nontoxic in acute toxicity tests conducted on both fathead minnows and fleas, and only moderately toxic in 10-15% of the chronic tests. Under OAC 3745-2-09(A)(3), chronic toxicity limits do not apply to streams designated as LRW. As discussed above, channelized drainage ways are not designed to support long-term balanced aquatic populations. For these reasons, MPC requests that Ohio EPA remove the chronic testing requirements from the final permit. In addition, we question the requirement to test fathead minnows when the new outfall location is used. The effluent table includes monitoring parameters for fathead minnows, but the related language in Part II does not have a reference to fathead minnow testing.

Response: The chronic toxicity WQS do not apply to streams designated LRW; they do apply to streams designated Modified Warmwater Habitat. The wasteload allocation for toxicity is set for this segment (0.2 mi. downstream of the discharge), and includes upstream Hurford Run, upstream Domer Ditch and Timken Company flows as dilution. The effluent toxicity data shows that the MPC effluent at times exceeds the wasteload allocation. This is reflected in the Agency's determination that the discharge has the reasonable potential to contribute to exceedances of toxicity WQS.

Because they are based on a narrative standard, toxicity limits are not required when the Agency finds that a specific pollutant can be limited that controls the toxicity. In this case, past Toxicity Identification Evaluations submitted by MPC demonstrated that the effluent toxicity is caused by total dissolved solids. Ohio EPA chose to limit TDS in place of having chronic toxicity limits in the permit. We have continued chronic toxic monitoring requirements in the permit as a periodic check to ensure that toxicity levels remain relatively constant. The inclusion of fathead minnow testing was an error, and has been removed in the final permit.

Comment: The draft permit proposes a daily maximum, year-round temperature limit of 37°C, measured as a once per day reading from a continuous temperature monitor for the first 42 months of the permit's term, followed by the same numeric limit measured as a once per day reading from a maximum indicating thermometer for the remainder of the permit's term. The Refinery does not understand why the monitoring method should change during the term of the permit. MPC requests that the permit require the reporting of the maximum reading from a continuous temperature monitor for the entire term of the permit.

Response: We have made this change in the final permit.

Comment: The draft permit indicates that three different flows were used to calculate the proposed concentration and loading limits for three different sets of parameters for Outfall 001. Concentration and loading limits for TDS, ammonia and selenium were based on a flow of 1.89 MGD; concentration and loadings for fluoride were based on a flow of 1.67 MGD; and concentration and loadings for BOD, COD, TSS, oil&grease, sulfide, phenolics and chromium were based on a flow of 1.44 MGD. MPC does not understand why three different flows were used to calculate proposed numeric limits for three different sets of parameters.

The fact sheet states that "concentration and loading limits were calculated using different flows for different parameters, based on the requirements of Ohio's permit and antidegradation rules. The new loading limits for dissolved solids, ammonia and selenium were calculated using....the flow used in the wasteload allocation. Fluoride loading limits...and the concentration limits for BOD, COD, TSS, O&G, sulfide, phenolics and chromium and hex. Chromium were calculated using....lower flows because Marathon did not request additional loading in its renewal application".

Marathon submitted in its renewal application the current production of the Refinery and its current flow information. Under Ohio EPA's antidegradation rule, loading increases that are within the production capacity of the Refinery are exempted from the requirements of the antideg rule [OAC 3745-1-05(B)(2)(b)]. The production and flow figures submitted with the application are well within the documented production capacity of the Refinery, and thus MPC did not need to specifically request

a loading increase and an antideg review in order for Ohio EPA to use the correct flow to calculate all applicable permit limits. In addition, the designation of all of Hurford Run (other than the last mile) as LRW/MWH means that the stream is classified as a limited quality water under the antideg rule, and thus is exempted for this separate reason from all but minimal information submittal requirements under the rule [OAC 3745-1-05(D)(1)(a)]. For these two reasons, the antideg rule is not an impediment to the Agency using the higher flow to calculate the proposed limits for the Refinery.

The Refinery is concerned that if it accepts permit limits based on the use of incorrect flows or incorrect calculations under the oil refinery categorical effluent rules, it will be difficult for the Refinery to request the correct permit limits in the future. Therefore, MPC requests that Ohio EPA issue the final permit with adjusted limits to reflect the correct flows and the corrected calculations under the oil refinery categorical effluent guidelines.

Response: Concentration and loading limit were calculated using the correct flows for each parameter, as required in Ohio rules. The new limits for TDS, ammonia and selenium were calculated using flows specified in Ohio's WQS Implementation Rules, specifically OAC 3745-2-05(A)(4)(b) which requires Ohio EPA to use a "reasonable measure of average" flow for dischargers that are not public treatment works. In this case, Ohio EPA chose an upper bound of monthly average discharge flows (1.89 MGD) as the most representative average flow.

The flows used to set loading limits for fluoride, and concentration limits for BOD, COD, TSS, oil&grease, sulfide and phenolics are flows used in previous permits. Increases of loading can not be allowed under the cited provision of the Antidegradation Rule because the current loading limits are the highest loadings authorized in any MPC permit since the facility achieved BAT treatment standards. The cited paragraph in the rule exempts permittees from antidegradation requirements for:

(b) Any existing source where the net increase is:
(i) The result of allowing a previously authorized or documented production or treatment capacity to be achieved;

Under this rule, existing sources are exempt only when a production or output increase have been authorized in a previous permit as loading or documented in a PTI. MPC's NPDES loading limits for BOD, COD, TSS,

oil&grease, sulfide and phenolics have been essentially the same since the plant achieved BAT standards in the 1970's. Ohio EPA is also unaware of any PTIs that describe the capacity of the treatment system to handle more loading. Because of these requirements, any loading increase would be subject to antidegradation requirements. As a result, Ohio EPA has left the flow basis for the loading and concentration limits the same in the final permit.

Comment: The draft permit proposes that effective 42 months after the permit's effective date all monitoring for Outfall 001 be done "when discharging". Since the Refinery no longer intends to move the discharge to the Tuscarawas River, this term of the draft permit, if not changed, would mean that the refinery would have to continuously sample 24 hours, 7 days a week, for all parameters at Outfall 001. This is a mistake. The same monitoring frequencies in effect for the first 42 months of the permit should be in effect for the remainder of the permit's term.

Response: The "when discharging" sampling frequency was set on the assumption that the discharge would be relocated to the Tuscarawas River. We have re-set the frequencies to those in the interim table, as requested.

Comment: The term "Quarterly-tox3" is used as a frequency for toxicity test sampling. But this term is not defined in the draft permit. Historically, the required testing months were February, May, July and November, which is slightly different from the definition of the term "quarterly" found in Part III of the permit. MPC requests clarification of the monitoring frequency/months for the biomonitoring program.

Response: We have changed the monitoring months to those in the current permit. These months are described as "Quarterly-tox2" and are defined in the footnotes to the effluent tables.

Comment: The proposed monitoring frequency for E. coli. is excessive. Because the Refinery does not chlorinate Outfall 001, a once per week monitoring frequency is all that is necessary if any E. coli. limit is required, and is also more manageable because the maximum hold time for the method is so short. MPC notes that the City of Canton, which has a much larger discharge, monitors E. coli. only once per week.

Response: We agree to apply the E. coli. monitoring only during periods when sanitary wastewater is discharged to the process wastewater treatment system.

Comment: The sample type for chlorine should be a single grab sample instead of a daily multiple grab. MPC also requests that the frequency for sampling be reduced from daily to once every two weeks in the final permit.

Response: We have made this change in the final permit.

Comment: The mercury sample type in the Outfall 001 requirements should be changed to "grab".

Response: We have made this correction in the final permit.

Comment: MPC wishes to formalize in the final permit its earlier agreement with NEDO inspectors regarding the location for taking grab samples, temperature compliance monitoring and pH compliance monitoring. These parameters are not monitored at the flume that is listed in the permit as the sampling point. Instead, through an informal agreement with the NEDO staff, these samples are collected inside the Filter Building upstream of the clear well. No further treatment is provided past this point.

Response: We have included these items in the sample location description in Part II of the permit.

Comment: The new requirement to install a sign for outfall 001 is problematic. The Refinery's outfall does not discharge directly to the stream, but rather into the county storm sewer line that runs the length of Gambrinus Avenue before discharging to the stream. Thus the discharge point at Hurford Run is not just the Refinery's wastewater, but also storm water, oil, sediment, and anything else discharged into the street that reaches the storm sewer line. It would be incorrect to post a sign at the discharge point into Hurford Run indicating that everything that exits the pipe comes from the Refinery. MPC requests that Ohio EPA grant a waiver of this requirement under OAC 3745-33-08(A)(12)(a).

Response: We have removed this requirement from the permit based on the cited waiver. Based on the distance to the stream from the monitored plant outfall, we agree that signage is not reasonable in MPC's case.

Comment: We would like to have an additional 6 months in the compliance schedule (extend each deadline by 6 months) in order to accommodate any additional studies and design for the connection to the city storm sewer, easement acquisition, additional summer construction season, selenium treatment studies and equipment installation, etc. This would make the whole schedule 52 months in length.

Response: We have made these changes in the final permit. We suggest that MPC submit the next renewal application a few months early to provide sufficient time to discuss permit conditions.

If you have questions about the final permit or our responses, please contact Eric Nygaard at (614) 644-2024 or Todd Surrena at (330) 963-1255.

Sincerely,

FOR PAUL NOVAK

Paul G. Novak, P.E., Manager
Permit and Compliance Section
Division of Surface Water

PGN/EN

cc: Todd Surrena
permit file 3IG00000