BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
MARATHON PETROLEUM COMPANY LP,	)	
	)	
Petitioner,	)	
	)	
v.	)	PCB No. 2018-049
	)	
ILLINOIS ENVIRONEMNTAL PROTECTION AGENCY,	)	
	)	
Respondent.	)	

NOTICE OF FILING

To:

Don Brown, Clerk of the Board Illinois Pollution Control Board James R. Thompson Center, Suite 11-500 100 W. Randolph Street Chicago, IL 60601 don.brown@illinois.gov (via electronic mail)	Attached Service List

PLEASE TAKE NOTICE that I have today electronically filed with the Office of the Clerk of the Pollution Control Board a RECOMMENDATION OF THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY, a copy of which is herewith served upon you.

Respectfully submitted,

ILLINOIS ENVIORMENTAL PROTECTION AGENCY

Dated: September 10, 2018

By: /s/ Sara G. Terranova

Sara G. Terranova
Assistant Counsel
Division of Legal Counsel
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BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

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ILLINOIS ENVIRONEMNTAL PROTECTION AGENCY,	)	
	)	
Respondent.	)	

RECOMMENDATION OF THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

NOW COMES the Illinois Environmental Protection Agency (Agency), by and through one if its attorneys, Sara G. Terranova, and in response to the Petition to Approve Alternative Thermal Effluent Limitations (Petition) filed with the Illinois Pollution Control Board (Board) on December 15, 2017, by Marathon Petroleum Company LP (Marathon or Petitioner), pursuant to 35 Ill. Adm. Code 106.1100 et seq. (Part 106, Subpart K), submits the following recommendation.

INTRODUCTION

On December 15, 2017, Marathon filed the Petition asking the Board to approve alternative thermal effluent limitations for its discharge to Robinson Creek from the integrated petroleum refinery (Refinery).

Section 316(a) of the Federal Clean Water Act allows for an owner or operator to demonstrate that the effluent limitations for the facility's heated effluent are more stringent than necessary to "assure the propagation of balanced, indigenous population of shellfish, fish, and wildlife in and on the body of water into which the discharge is to be made." *See* 33 U.S.C. 1326.

The Board incorporated this Federal Clean Water Act provision into 35 Ill. Adm. Code 304.141(c), which allows the Board to determine that alternative requirements may apply to thermal discharge. The Petition was filed pursuant to the Board's procedures for requesting alternative thermal relief under Part106, Subpart K to demonstrate that the effluent limitations for the facility's heated effluent are more stringent than necessary and to request alternative thermal limitations.

BACKGROUND

The Refinery discharges to Robinson Creek at a point where 1.4 cubic feet per second of flow exists upstream of the outfall during critical 7Q10 low-flow conditions. The Refinery has an average flow of 2.666 million gallons per day. Robinson Creek is classified as a General Use Water. Robinson Creek is not listed as a biologically significant stream in the 2008 Illinois Department of Natural Resources Publication *Integrating Multiple Taxa in a Biological Stream Rating System*, nor is it given an integrity rating in that document. However, approximately 1.3 miles downstream, Robinson Creek is rated an "E" stream. Robinson Creek, Waterbody Segment, BFC-26, is listed on the draft 2016 Illinois Integrated Water Quality Report and Section 303(d) List as impaired for aquatic life use with potential cause given as phosphorus and aesthetic quality use with potential causes given as odor and petroleum hydrocarbons. Robinson Creek is subject to enhanced dissolved oxygen standards.

The Refinery's discharges to Robinson Creek are subject to thermal effluent limitations in the Refinery's National Pollutant Discharge Elimination System Permit No. IL00004073 (NPDES Permit) that are based on temperature standards in 35 Ill. Adm. Code 302.211(d) and (e) and allowed mixing requirements in 35 Ill. Adm. Code 302.102. Specifically, the existing limitations are described in Special Condition 8 of the NPDES Permit as follows:

> Special Condition 8. For outfall 001, discharge of wastewater from this facility must not alone or in combination with other sources cause the receiving stream to violate the

following thermal limitations at the edge of the mixing zone which is defined by Section 302.211, Illinois Administrative Code, Title 35, Chapter 1, Subtitle C, as amended:

A. Maximum temperature rise above natural temperature must not exceed 5ºF (2.8ºC).

B. Water temperature at representative locations in the main river shall not exceed the maximum limits in the following table during more than one (1) percent of the hours in the 12-month period ending with any month. Moreover, at no time shall the water temperature at such locations exceed the maximum limits in the following table by more than 3ºF (1.7ºC). (Main river temperatures are temperatures of those portions of the river essentially similar to and following the same thermal regime as the temperatures of the main flow of the river.)

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
ºF	60	60	60	90	90	90	90	90	90	90	90	60
ºC	16	16	16	32	32	32	32	32	32	32	32	16

PETITIONER'S REQUESTED RELIEF

Marathon requests that, in lieu of the existing temperature limitations in Marathon's NPDES Permit based on 35 Ill. Adm. Code 302.211(d) and (e), the Board approve the following alternative thermal effluent limitations for discharges from the Refinery's Outfall 001:

- Water temperature in Robinson Creek downstream from the MPC 001 outfall at a point instream in the vicinity of the IL Route 1 bridge shall not exceed the maximum limits in the following table during more than one (1) percent of the hours in the 12-month period ending with any month. Moreover, at no time shall the water temperature at such location exceed the maximum limits in the following table by more than 3ºF (1.7ºC). (Robinson Creek temperatures are temperatures of those portions of the creek essentially similar to and following the same thermal regimes as the temperature of the main flow of the creek.) The average water temperature in Robinson Creek downstream from the MPC 001 outfall at a point instream in the vicinity of the IL Route 1 bridge for the period June 16 – September 15 shall not exceed 87ºF.

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
ºF	65	65	74	82	88	90	90	90	90	87	85	74
ºC	18.3	18.3	23.3	27.8	31.1	32.2	32.2	32.2	32.2	30.6	29.4	23.3

- In lieu of 35 Ill. Adm. Code 302.102(b)(8), the following shall apply: the area and volume of mixing shall extend from the MPC 001 Outfall to a point instream in the vicinity of the IL Route 1 bridge.

Also, Marathon proposes that the instream sampling location for monitoring the alternative

effluent limitations, i.e. the point of compliance, be located at a point instream in the vicinity of the IL Route 1 bridge. *See* Petition at 22.

AGENCY'S RECOMMENDATION

1) Whether the Board should grant the petitioner's requested alternative thermal effluent limitation: The Agency, pursuant to 35 Ill. Adm. Code 106.1145, recommends the Board GRANT the alternative thermal effluent limitations for discharges from the Refinery's Outfall 001. However, the Agency suggests that the language "in the vicinity of the IL Route 1 bridge" be changed to "at the IL Route 1 bridge" each time it is used in the requested relief.

The Agency is not rendering an opinion regarding the Illinois Department of Natural Resource's (IDNR) March 29, 2018 letter (*See* Letter to Scott Twait, Illinois EPA, from Keith Shank, IDNR, RE: Alternative Thermal Effluent Limitations, Section 316(a) of the Clean Water Act. (March 29, 2018) (Attachment A)) which offered recommendations for the protection of Bigeye Chub. Additionally, the Agency is not rendering an opinion on Marathon's Response (*See* Marathon Petroleum Company LP's Response to the Illinois Department of Natural Resources' Consultation Letter, Dated March 29, 2018 (August 14, 2018) (*See* Attachment B)) to IDNR's letter and recommendations.

2) The rationale for the Agency's position: The Agency agrees the Petitioner has demonstrated that the proposed alternative thermal limits would not adversely affect the balanced, indigenous population of fish, shellfish, and wildlife currently inhabiting the receiving water.

The impaired status of Robinson Creek precludes a Type I thermal demonstration (no prior appreciable harm), as additional stressors confound the ability to make a determination on the presence or absence of prior appreciable harm due to thermal loadings. Therefore, Marathon performed a predictive analysis for the 316(a) demonstration. The principal conclusion of the

316(a) demonstration is that the existing discharge of heat by the Marathon discharge poses no threat to the eventual recovery of the aquatic biota in Robinson Creek to attain full support of aquatic life use. The predictive demonstration consisted of using the Fish Temperature Modeling System (FTMS) (Yoder 2008) to determine protective "true summer" (June 16 – September 15) maximum and average temperatures for a list of Representative Important Species (RIS) and comparing the results to the measured and modeled summer temperature regime. *See* Petition at 13. The FTMS derived summer period maximum of 90.7 ^{o}F and summer average of 87.1 ^{o}F are sufficiently protective to serve as alternatives to the current 90 ^{o}F maximum and delta 5 ^{o}F effluent limitations. *Id.* at 20. Marathon's proposal takes a conservative approach by using the maximum of 90 ^{o}F instead of 90.7 ^{o}F and the average of 87 ^{o}F, instead of 87.1 ^{o}F. *Id.* The 316(a) demonstration includes an analysis of the frequency of thermal stress and recovery periods with an evaluation of the significance of intermittent high temperatures and offsetting stress recovery periods. *Id.* at 13.

Based on the determination of true summer season short- and long-term protective thresholds and the analysis of the dynamics of the temperature regime downstream from the Marathon outfall in Robinson Creek, the thermal discharge should not preclude recovery of the resident biota to meet the Illinois General Use for aquatic life. *Id.* at 21. Exceedances of the FTMS short-term threshold of 90.7 ^{o}F are brief and sufficiently offset by lower temperatures that provide adequate recovery periods. *Id.* Summer period averages were well below the FTMS long-term survival threshold and virtually 100% of the upper avoidance temperatures of the RIS. *Id*. The Mean Weekly Average Temperature for growth is exceeded for only two recreational species when using a liberal interpretation of RIS that may be present (e.g., including white sucker). *Id.* The analyses and observations in the 316(a) Demonstration support the conclusion that the proposed

limits are sufficiently protective of the RIS and the full assemblages by extension. *Id.* As such, this satisfies the demonstration that the requested alternative thermal effluent limitation under Section 316(a) is justified. *Id.*

Marathon has asked for a mixing zone greater than that allowed by Section 302.102(b)(8) to comply with the alternative thermal effluent limitations that have been proposed. The regulations dictate that no more than 50% of the volume of stream flow shall be used in streams where the dilution ratio is less than 3:1, so as to provide a zone of passage for aquatic life. *See* 35 Ill. Adm. Code 302.102(b)(8). Marathon's compliance point for the proposed effluent limitations would be approximately 1.7 miles downstream of the outfall and would utilize the entire volume of stream flow. *Id.* at 22. This relief is larger than what could be typically granted by the Agency. However, as summarized within Exhibit 4 of the Petition, the stream biota indigenous to this small watershed possess thermal tolerance thresholds greater than that of the proposed alternative thermal effluent limitations. *See generally* Exhibit 4 of the Petition. Further, any short-term exceedances of the maximum effluent limitations within the 1.7 mile mixing zone would be offset with stress recovery periods (cooler temperatures) of longer durations. *Id.* at 2. Thus, the proposed alternative thermal effluent limitations are not expected to adversely impact the balanced, indigenous community of shellfish, fish, and wildlife that currently exist in the study area.

The field results indicate that thermal alterations do not extend beyond the mouth of Robinson Creek, which has an approximate 15 $mi.^2$ catchment. *Id.* at 9.

Outside of the mixing zone detailed above, the maximum thermal limits for the summer will not be increased. In fact, they include an average temperature of 87 ^oF for the period of June 16 through September 15 and reduce the maximum temperature in the transition months between summer and winter (October, November, April and May). *See* Petition at 22.

Marathon has asked for less stringent thermal limits in the winter months (December through March), and they have asked for relief from 35 Ill. Adm. Code 302.211(f) (delta 5 ^{o}F). *See* Petition at 21. The Robinson POTW (DAF = 2.5 MGD) is upstream of the Marathon discharge. *Id.* at 2. Since waste water travels underground to get to the sewage treatment facilities, typical sewage treatment facilities discharge cooler temperatures during the summer months and warmer temperatures in the winter months than the waters in the natural environment. Therefore, the flow upstream of the Marathon discharge does not possess a natural thermal regime. The FTMS methodology relies on setting the non-summer months based on ambient temperatures. *See* Exhibit 4 at 2 of the Petition. Characterizing the ambient temperature regime was accomplished in 2016 by deploying Datasonde and HOBO continuous monitors at selected locations upstream and downstream of the Marathon discharge. *Id*. at 8. As summarized within Exhibit 4 of the Petition, the requested increase of winter thermal effluent limitations and the relief from 35 Ill. Adm. Code 302.211(f) (delta 5 ^{o}F) are not expected to provide adverse thermal stress to biota within the study area. *See generally* Exhibit 4 of the Petition.

3) Whether the plan of study sufficiently addresses the Agency's response pursuant to Section 106.1120(f): The only concern that the Agency had for the "Early Screening Information" and the "Detailed Plan of Study" was that only one year of biological study was planned. The Agency was concerned that 2017 could have "atypical" conditions and monitoring would be done in conditions that were not representative of typical conditions. The Agency informed Marathon that if 2017 was not a typical year, additional monitoring might be required. However, after the data was collected, the Agency agreed that the conditions during the summer, when the monitoring was completed, were typical and one year of data collection was sufficient.

4) Whether the petition has met the requirements of Part 106, Subpart K. The Agency believes that the Petitioner has met the requirements for requesting alternative thermal relief under Part 106, Subpart K. Petition content requirements for requesting alternative thermal relief are provided in 35 Ill. Adm. Code 106.1130. *See* 35 Ill. Adm. Code 106.1130.

Section 106.1130(a); General Plant Description

The Agency believes that the Petitioner has met the requirements in Section 106.1130(a). *See* Petition at 6-8; Section III(A)

Section 106.1130(b); Description of Method for Heat Dissipation

The Agency believes that the Petitioner has met the requirements in Section 106.1130(b). *See* Petition at 9 -10; Section III(B).

Section 106.1130(c); A summary of compliance or non-compliance with thermal requirements at the facility in the past five years

The Agency believes that the Petitioner has met the requirements in Section 106.1130(c). *See* Petition at 10; Section III (C).

Section 106.1130(d); The detailed plan of study submitted to the Agency under Section 106.1120(a) and the Agency's written response under Section 106.1120(f)

The Agency believes that the Petitioner has met the requirements in Section 106.1130(d). *See* Petition at 10; Section III (D).

Section 106.1130(e); The results of the studies conducted under the detailed plan of study submitted under Section 106.1120

The Agency believes that the Petitioner has met the requirements in Section 106.1130(e). *See* Petition at 11-21; Section III (E).

Section 106.1130(f); Any additional information or studies, including information or

guidance published by USEPA, that the petitioner judges to be appropriate to support the alternative thermal effluent limitation demonstration

The Agency believes that the Petitioner has met the requirements in Section 106.1130(f). *See* Petition at 21; Section III (F).

Section 106.1130(g); A statement of the requested relief

The Agency believes that the Petitioner has met the requirements in Section 106.1130(g). *See* Petition at 21-22; Section III (G).

5) Any information the Agency believes is relevant to the Board's consideration of the proposed alternative thermal effluent limitation: The Agency does not believe that any additional information is needed to supplement the alternative thermal relief request.

6) Whether the Agency communicated with or received comments from the Illinois Department of Natural Resources, the United States Fish and Wildlife Service, or USEPA and the content of those communications: On March 17, 2016, the Agency submitted the details of Marathon's project in IDNR's online EcoCAT review tool. The Natural Resource Review Results indicated the Illinois Natural Heritage Database contained no record of protected resources identified in vicinity of the project location and that the consultation for endangered species protection and natural areas preservation was terminated. *See* EcoCAT Natural Resource Review Results, IDNR Project Number 1608667 (March 17, 2016) (Attachment C).

On May 10, 2018, the Agency forwarded Marathon's Detailed Plan of Study (*See* Petition Exhibit 5(c)) to IDNR. *See* Email from Scott Twait, Illinois EPA, to Nathan Grider, IDNR, Subject: FW: Marathon Petroleum IAC 106.1120 Detailed Plan of Study (May 10, 2016) (Attachment D).

On June 2, 2016, IDNR issued a letter to Marathon of no objection to Marathon's Detailed Plan of Study. *See* Petition Exhibit 5(e). In the letter, IDNR reiterated that the project had been

reviewed through EcoCAT, was auto-terminated, and that a more detailed review of the Natural Heritage Data base by IDNR resulted in a determination that there were "no records for state threated or endangered aquatic species occurring in the proposed study area of Robinson Creek and its tributaries, Lamotte Creek, and Sugar Creek." *See Id*.

On January 26, 2018, IDNR sent Illinois EPA a letter indicating that IDNR was reopening the consultation process as new information pertaining to the presence of a listed species, the Bigeye Chub, near the project site had become available. *See* Letter from Keith Shank, IDNR, to Scott Twait, Illinois EPA (January 26, 2018) (Attachment E). In the letter, IDNR stated it only recently became aware of Case PCB-2018-049, filed on December 15, 2017, by Marathon to request approval of alternative thermal effluent limitations. *See Id*. As such, IDNR recommended that the Agency take no further action on the thermal variance until both IDNR and the Agency could discuss the implications of the presence of the identified species.

On February 2, 2018, the Agency met with IDNR to discuss the Bigeye Chub occurrences and Marathon's Petition.

On February 14, 2018, the Agency met with IDNR and Marathon to further discuss the Bigeye Chub occurrences and Marathon's Petition.

On March 29, 2018, after conducting its review of Marathon's petition and supporting documents, IDNR issued a letter to the Agency. *See* Attachment A. The letter offered recommendations for protection of the Bigeye Chub and indicated the consultation process was again closed.

The United States Environmental Protection Agency was informed that Marathon submitted the petition to the IPCB and was provided the link to the Board's website. *See* Email from Scott Twait, Illinois EPA, to Mark Ackerman, United States Environmental Protection

Agency, Subject: FW:316(a) submittals – Marathon (January 9, 2018) (Attachment F).

WHEREFORE, the Agency respectfully submits its Recommendation.

Respectfully submitted,

ILLINOIS ENVIORMENTAL PROTECTION AGENCY

Dated: September 10, 2018

By: /s/ Sara G. Terranova
Sara G. Terranova
Assistant Counsel
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CERTIFICATE OF SERVICE

I, Sara G. Terranova, Assistant Counsel for the Illinois EPA, herein certifies that I have served a copy of the foregoing Notice of Filing, Appearance for Sara G. Terranova, and the Recommendation of the Illinois Environmental Protection Agency, via electronic mail upon:

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Respectfully submitted,

ILLINOIS ENVIORMENTAL PROTECTION AGENCY

Dated: September 10, 2018

By: /s/ Sara G. Terranova
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ATTACHMENT A

ILLINOIS DEPARTMENT OF NATURAL RESOURCES

Illinois Department of Natural Resources

One Natural Resources Way Springfield, Illinois 62702-1271
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Bruce Rauner, Governor
Wayne A. Rosenthal, Director

March 29, 2018

Mr. Scott Twait
Illinois Environmental Protection Agency
1021 North Grand Avenue East
PO Box 19276
Springfield, IL 62794-9276

RE: Alternative Thermal Effluent Limitations, Section 316(a) of the Clean Water Act and 35 Ill. Adm. Code 304.141(c), Marathon Petroleum Company LP Refinery
Endangered Species Consultation Program
EcoCAT Review #1808455

Dear Mr. Twait:

The Department has received your information for this project for the purposes of consultation pursuant to the *Illinois Endangered Species Protection Act* [520 ILCS 10/11], the *Illinois Natural Areas Preservation Act* [525 ILCS 30/17], and Title 17 *Illinois Administrative Code* Part 1075. Additionally, the Department may offer recommendations for species covered under the *Fish & Aquatic Life Code* [515 ILCS 5, *et seq.*]; the *Illinois Wildlife Code* [520 ILCS 5, *et seq.*]; and the *Herptiles-Herps Act* [510 ILCS 69].

The proposed action is the development of Illinois Environmental Protection Agency (Agency) recommendations to the Illinois Pollution Control Board in Case PCB 2018-049, a request for Alternative Thermal Effluent Limitations (Petition) by Marathon Petroleum Company (Marathon) for its petrochemical refinery plant in Robinson, Crawford County, Illinois. The Department has focused its evaluation on Exhibit 4 supporting Marathon's Petition.[1]

In its review of the Petition and its supporting documents, the Department noted the fish assemblage data report[2] (Report) documented the occurrence of four individual Illinois state-listed endangered **bigeye chub** (*Hybopsis amblops*) in Robinson Creek, two of them at Marathon's Outfall 001 and one upstream and one downstream from Outfall 001 in Robinson

[1] Exhibit 4: *Technical Support Documentation for Alternative Thermal Effluent Limitations under Section 316(a) of the Clean Water Act and 35 Ill. Adm. Code 304.141(c) for the Marathon Petroleum Company LP Refinery located in Robinson, Illinois.*
[2] *Biological and Water Quality Assessment of Robinson and Sugar Creeks and Tributaries 2016 (Midwest Biodiversity Institute, 2017)*

Creek. Four additional individual **bigeye chubs** were documented in a nearby stream known as LaMotte Creek. The **bigeye chub** is an Illinois state-listed endangered species. However, the **bigeye chub** was not identified as a state-listed endangered species in the Report when it was prepared nor in other documents filed to support the Petition before the Illinois Pollution Control Board. After discussions with this Department, Marathon filed an Addendum to its Petition with the Illinois Pollution Control Board acknowledging the occurrence of the **bigeye chub** in Marathon's thermal outfall into its receiving waters (i.e., Robinson Creek).[3]

The Department has reviewed the Petition and its Addendum and believes that neither document satisfies *Title 35 Environmental Protection Code Part 106 Subpart K*, specifically Section 106.1130 (e)(4) provisions concerning "criteria and methodology used to assess whether a balanced indigenous community of shellfish, fish and wildlife will be maintained in the receiving waters and the protection of threatened and endangered species."

Based on available information, the Department believes the Petition does not demonstrate the proposed Alternative Thermal Effluent Limits will protect endangered species present in the receiving waters and will support a balanced indigenous community pursuant to Section 106.1130(e).[4] Furthermore, Section 106.1105 requires a demonstration "to assure the protection and propagation of a balanced, indigenous population...in and on the body of water into which the discharge is to be made."

Published scientific research on the thermal tolerance of the **bigeye chub** is limited to a single test performed on a single animal.[5] While this test can be criticized on several grounds such as, non-regional location of the study area, the Lutterschmidt/Hutchinson test currently constitutes the best evidence of the thermal upper tolerance limits and such effects upon this species.[6] Among these effects are spasm and the inability of the **bigeye chub** to "right" itself (i.e., to turn upright) when in waters with upper thermal temperatures.

The Department notes that a single test on a single animal does not provide a statistical confidence level; reliance on a single study or test is insufficient. Thermal tolerance testing on a larger sample of **bigeye chubs** taken from a regional watershed, such as the Illinois Wabash River or the Illinois Vermilion River, would provide greater confidence about the thermal tolerance of this endangered fish population.

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[3] *Motion for Leave to File an Addendum to Exhibit 4 of the Petition to Approve Alternative Thermal Effluent Limitations and Addendum to Technical Support Documentation for Alternative Thermal Effluent Limitations (Electronic Filing)*; filed February 28, 2018; granted March 14, 2018.

[4] *Title 35 Environmental Protection Code Part 106 Subpart K, Section 106.1130(e)(4)* requires the petition to demonstrate "a balanced indigenous community, as defined, of shellfish, fish and wildlife will be maintained in the receiving waters and that threatened and endangered species will be protected."

[5] "*The Critical Thermal Maximum: Data to Support the Onset of Spasms as the Definitive Endpoint*," William I. Lutterschmidt and Victor H. Hutchinson, Canadian Journal of Zoology, February 1997, pp.1553-1560.

[6] As reported, Loss of Righting Response occurred at 30.1°C (86.18°F); Onset of Spasms occurred at 31.7°C (89.06°F).

The Department also believes that supporting thermal data for the Petition indicate temperatures in the study area which exceed those temperatures tolerated by the **bigeye chub**.[7] When such temperature exceedances occur during summer months, any **bigeye chubs** present in Robinson Creek, whether at, below and above Outfall 001, would be forced to vacate the affected reaches of Robinson Creek. If any **bigeye chubs** in Robinson Creek were unable to escape such temperatures, injury or death from thermal shock would likely occur.

The Department believes that any of the above survival behaviors to avoid thermal exceedances attributed to thermal discharges from Outfall 001 would constitute a "take" (i.e., harass, harm, or injury) which is prohibited by the *Illinois Endangered Species Protection Act* [520 ILCS 10/3].[8] As defined by law, "Take" means, in reference to animals and animal products, to harm, hunt, shoot, pursue, lure, wound, kill, destroy, harass, gig, spear, ensnare, trap, capture, collect, or to attempt to engage in such conduct.[9]

The *Illinois Endangered Species Protection* Act empowers the Department to authorize any "taking" otherwise prohibited if that "taking" is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.[10] Providing the Department can determine the "taking" will not reduce the likelihood of the survival or recovery of the **bigeye chub** in the wild in Illinois, an *Incidental Take Authorization* could be sought and obtained by Marathon pursuant to 17 Ill. Adm. Code 1080. The Department may authorize the "taking" of listed species for purposes of scientific research.[11] The Department may issue the necessary "scientific research permit" upon approval of a detailed research proposal for a thermal bioassay of the **bigeye chub**.

The Department further notes that the current thermal discharge levels for Outfall 001 may be a contributing factor to the unusually-high rate of Deformities, Eroded fins, Lesions, and Tumors (DELTs) documented in the aquatic community by Midwest Biodiversity Institute (MBI), environmental contractor for Marathon. Although MBI observed no DELTs on the **bigeye chub**, the high rate of DELTs on other fish found in the study area indicate an adverse impact to the "balanced indigenous community" of fish, as well as a risk to the **bigeye chub.** Lesions on fish are often related to bacterial infections; placing additional thermal stress on fish already affected by chemical stressors is likely to aggravate existing pathological conditions. The Department is concerned that the proposed alternative thermal limitation will increase the incidence of DELTS, thus harming the "balanced indigenous community." The Department believes the proposed Alternative Thermal Effluent Limits warrant additional assessment of the impacts to all indigenous fish.

The Department also questions the location of the stations where compliance will be measured. Given the large segments of Robinson Creek which will be included (1.7 miles and, currently, four miles), further data is needed demonstrating that these distances below Outfall 001 are

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[7] *Motion for Leave to File an Addendum to Exhibit 4 of the Petition to Approve Alternative Thermal Effluent Limitations and Addendum to Technical Support Documentation for Alternative Thermal Effluent Limitations (Electronic Filing)*; filed February 28, 2018; granted March 14, 2018; Figure 2, p. 6.

[8] "Sec. 3. It is unlawful for any person: (1) to possess, take, transport, sell, offer for sale, give or otherwise dispose of any animal or the product thereof of any animal species which occurs on the Illinois List;"

[9] 520 ILCS 10/2.

[10] 520 ILCS 10/5.5 and 17 Ill. Adm. Code Part 1080.

[11] 520 ILCS 10/4 and 17 Ill. Adm. Code Part 1070.

necessary to achieve compliance with the proposed alternative thermal effluent limitations. The Department believes that thermal compliance measured at Outfall 001, or as close as feasible to the discharge point, will avoid or minimize disruption of the "balanced indigenous community."

For the reasons stated above, the Department offers the following:

Recommendation #1: The Department recommends the need for a bioassay of the upper thermal tolerance limits of the Illinois Wabash Valley population of the endangered ***bigeye chub*** *to establish whether the proposed Alternative Thermal Effluent Limits are protective of endangered species known to be present in receiving waters.* The test subjects should be taken from the same population which will be subject to the proposed Alternative Thermal Effluent Limits to address the possibility that different populations of this species may have developed higher or lower tolerances. The research should seek to establish the temperatures which stimulate avoidance behavior (harassment), loss of righting response (harm), onset of spasms (injury), and death. Any proposed bioassay should follow standards and procedures approved by the Department pursuant to the "1070" research permit issued under the *Illinois Endangered Species Protection Act.*

Recommendation #2: The Department recommends the need for a bioassay of representative fish species is warranted to identify the character and likely causes of observed DELTs and to determine whether granting the Alternative Thermal Effluent Limits is likely to increase the incidence and/or severity of DELTs on fish in the receiving waters.

Recommendation #3: The Department recommends that compliance with the Alternative Thermal Effluent Limits should be measured at Outfall 001, or as near as feasible, rather than the proposed point 1.7 miles farther downstream on Robinson Creek. to minimize disruption of the "balanced indigenous community," including the stated-listed ***bigeye chub.***

Recommendation #4: The Department recommends the need for Marathon to seek and obtain an Incidental Take Authorization for the endangered ***bigeye chub*** *from the Department.*

Consultation on the part of the Department is closed, unless the Illinois Environmental Protection Agency desires additional information or advice related to these recommendations. Pursuant to 1075.40(h), please notify the Department of the Agency's disposition of these recommendations. Consultation for Part 1075 is valid for two years unless new information becomes available which was not previously considered; the proposed action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the recommended action has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary.

The Department's natural resource review reflects the information existing in the Illinois Natural Heritage Database at the time of the project submittal, and should not be regarded as a final statement on the project being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are unexpectedly encountered during the project's implementation, the applicant must comply with the applicable statutes and regulations.

Please contact me with any questions about these recommendations.

Sincerely,

Keith M. Shank, Chief
Impact Assessment Section
Department of Natural Resources
(217) 785-4984
keith.shank@illinos.gov

ATTACHMENT B

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

In the Matter Of:	)	
	)	
MARATHON PETROLEUM COMPANY LP,	)	
	)	
Petitioner,	)	
	)	
v.	)	PCB No. 18-49
	)	
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,	)	
	)	
Respondent.	)	

NOTICE OF FILING

TO: Don Brown
Clerk of the Board
Illinois Pollution Control Board
100 W. Randolph Street, Suite 11-500
Chicago, Illinois 60601
(VIA ELECTRONIC MAIL)

Carol Webb
Hearing Officer
Illinois Pollution Control Board
1021 North Grand Avenue East
P.O. Box 19274
Springfield, Illinois 62794-9274
(VIA ELECTRONIC MAIL)

(SEE PERSONS ON ATTACHED SERVICE LIST)

PLEASE TAKE NOTICE that I have today filed with the Office of the Clerk of the Illinois Pollution Control Board **MARATHON PETROLEUM COMPANY LP'S RESPONSE TO THE ILLINOIS DEPARTMENT OF NATURAL RESOURCES' CONSULTATION LETTER, DATED MARCH 29, 2018,** a copy of which is herewith served upon you.

Respectfully submitted,
MARATHON PETROLEUM COMPANY LP,

Dated: August 14, 2018

By: /s/ Joshua J. Houser
One of Its Attorneys

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CERTIFICATE OF SERVICE

I, Joshua J. Houser, the undersigned, on oath state the following:

That I have served the attached **MARATHON PETROLEUM COMPANY LP'S RESPONSE TO THE ILLINOIS DEPARTMENT OF NATURAL RESOURCES' CONSULTATION LETTER, DATED MARCH 29, 2018** via electronic mail upon:

Don Brown
Clerk of the Board
Illinois Pollution Control Board
100 W. Randolph Street, Suite 11-500
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That my email address is Joshua.Houser@heplerbroom.com.

That the number of pages in the email transmission is 59.

That the email transmission took place before 5:00 p.m. on the date of August 14, 2018.

/s/ Joshua J. Houser
Joshua J. Houser

Date: August 14, 2018

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

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MARATHON PETROLEUM COMPANY LP,	)	
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Petitioner,	)	
	)	
v.	)	PCB No. 18-49
	)	
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,	)	
	)	
Respondent.	)	

MARATHON PETROLEUM COMPANY LP'S RESPONSE TO THE ILLINOIS DEPARTMENT OF NATURAL RESOURCES' CONSULTATION LETTER, DATED MARCH 29, 2018

MARATHON PETROLEUM COMPANY LP ("Marathon" or "MPC"), by and through its attorneys, HEPLERBROOM, LLC, hereby files its Response to the Illinois Department of Natural Resources' ("IDNR" or "Department") Consultation Letter, Dated March 29, 2018, that was attached as Attachment A to the Illinois Environmental Protection Agency's ("Illinois EPA" or "Agency") Motion to Extend Time to File the Illinois Environmental Protection Agency's Recommendation filed in this proceeding on April 12, 2018.

I. BACKGROUND

On December 15, 2017, Marathon filed its Petition to Approve Alternative Thermal Effluent Limitations ("Petition") in this proceeding. Exhibit 4 to the Petition is entitled "Technical Support Documentation for Alternative Thermal Effluent Limitations under Section 316(a) of the Clean Water Act and 35 Ill. Adm. Code 304.141(c) for the Marathon Petroleum Company LP Refinery located in Robinson, Illinois" ("TSD") and was prepared by Marathon's consultant, Midwest Biodiversity Institute ("MBI"). Exhibit 7 to the Petition is entitled

"Biological and Water Quality Assessment of Robinson and Sugar Creeks and Tributaries 2016" ("Bioassessment"), also prepared by MBI.

The Bioassessment's fish assemblage data revealed the occurrences of eight individuals of Bigeye Chub (*Hybopsis amblops*) within the study area (three sites in Robinson Creek and one site in Lamotte Creek). *See* Bioassessment, at Appendix B-2 page B2-4, Appendix B-3 pages B3-6, B3-7, B3-9, B3-16, and B3-25. Bigeye Chub is listed as an endangered species by the State of Illinois. *See* 17 Ill. Adm. Code § 1010.30(a). Bigeye Chub is not a federally listed species.

Prior to Marathon's filing of its Petition, as part of Illinois EPA's review and approval of Marathon's Detailed Plan of Study, Illinois EPA consulted with IDNR. On June 2, 2016, IDNR issued a letter of no objection to Marathon's Detailed Plan of Study. *See* Petition Exhibit 5, Letter from N. Grider, IDNR, to Marathon, c/o J. Titsworth, regarding Marathon's 316(a) Plan of Study and EcoCAT Number 1608667 (June 2, 2016). In that letter, IDNR reported that its review was "auto-terminated" due to "no protected resources identified in the immediate discharge area," and that IDNR's detailed review of the Natural Heritage Database resulted in "no records for state threatened or endangered aquatic species occur[ring] in the proposed study area of Robinson Creek and its tributaries, Lamotte Creek, and Sugar Creek." *Id.*

However, after Marathon filed its Petition, IDNR reviewed the Petition and supporting exhibits. Based on its review, IDNR sent Illinois EPA a letter, dated January 26, 2018, indicating that IDNR was reopening its consultation process due to the occurrences of Bigeye Chub reported in Marathon's Bioassessment. *See* Letter from Keith M. Shank, IDNR, to Scott Twait, Illinois EPA (Jan. 26, 2018), attached to Marathon's Motion for Leave to File an Addendum to Exhibit 4 of the Petition to Approve Alternative Thermal Effluent Limitations,

filed in this proceeding on February 27, 2018. IDNR provided Marathon with a copy of this letter on the same day and indicated that IDNR would be scheduling further discussions with Illinois EPA and Marathon.

In response to IDNR's consultation reopening letter, over the next couple of weeks, IDNR, Illinois EPA, and Marathon held several telephone conferences to preliminarily discuss potential Bigeye Chub thermal tolerance data and the reopened consultation process. Marathon understands that IDNR and Illinois EPA met on February 2, 2018, to further discuss the Bigeye Chub occurrences and Marathon's Petition. After that meeting, IDNR, Illinois EPA, and Marathon scheduled a meeting for February 14, 2018, to further discuss the Bigeye Chub occurrences and Marathon's Petition. In preparation for that meeting, MBI assisted Marathon by performing a detailed analysis of the potential for any adverse effects to Bigeye Chub associated with Marathon's requested alternative thermal effluent limitations.

On February 14, 2018, IDNR, Illinois EPA, and Marathon met at IDNR's offices and discussed in detail the occurrences of Bigeye Chub, the limited amount of thermal tolerance data available on Bigeye Chub, MBI's analysis of the potential adverse effects to Bigeye Chub that might be posed by Marathon's requested alternative thermal effluent limitations, and MBI's conclusion that the occurrence of Bigeye Chub in Robinson Creek has no effect on the conclusions of Marathon's 316(a) technical evaluation or on the alternative thermal effluent limitations that are being requested by Marathon. Also during the meeting, Marathon informed IDNR and Illinois EPA that Marathon would prepare an addendum to the TSD that would report MBI's Bigeye Chub analysis and conclusions, and that Marathon would supplement the record with this information by requesting leave from the Board to file the addendum in this proceeding.

Accordingly, MBI prepared an Addendum to the Technical Support Documentation for Alternative Thermal Effluent Limitations under Section 316(a) of the Clean Water Act and 35 Ill. Adm. Code 304.141(c) for the Marathon Petroleum Company LP Refinery located in Robinson, Illinois (February 27, 2018) ("Addendum"), which Marathon filed with the Board on February 27, 2018. Marathon intended for the Addendum to supplement the record in this proceeding by providing additional review and analysis of the potential for adverse effects to Bigeye Chub that might be posed by Marathon's requested alternative thermal effluent limitations, and providing the rationale for concluding that the occurrence of Bigeye Chub in Robinson Creek has no effect on the conclusions of Marathon's 316(a) technical evaluation or on the alternative thermal effluent limitations requested in Marathon's pending Petition, i.e., that Marathon's requested alternative thermal effluent limitations will assure the protection and propagation of a balanced, indigenous community of shellfish, fish, and wildlife in and on Robinson Creek.

On March 29, 2018, IDNR issued a letter to Illinois EPA providing IDNR's response to Marathon's Petition and Addendum and closing consultation on the part of IDNR. *See* Letter to Scott Twait, Illinois EPA, from Keith M. Shank, IDNR, RE: Alternative Thermal Effluent Limitations, Section 316(a) of the Clean Water Act and 35 Ill. Adm. Code 304.141(c), Marathon Petroleum Company LP Refinery Endangered Species Consultation Program, EcoCAT Review #1808455 (Mar. 29, 2018), attached as Attachment A to Illinois EPA's Motion to Extend Time to File the Illinois Environmental Protection Agency's Recommendation filed in this proceeding on April 12, 2018 (IDNR's letter hereafter the "March 29th Letter"). In the March 29th Letter, IDNR claims that Marathon's Petition, including the Addendum, "does not demonstrate the proposed Alternative Thermal Effluent Limits will protect endangered species present in the

receiving waters and will support a balanced indigenous community pursuant to Section 106.1130(e)." *Id.* at 2 (internal citation omitted). The March 29th Letter goes on to discuss the reasons why IDNR does not believe Marathon has satisfied 35 Ill. Adm. Code Section 106.1130(e), discuss why those reasons lead IDNR to believe that Marathon's requested alternative thermal effluent limitations would constitute a "take" under the Illinois Endangered Species Protection Act (520 ILCS 10/3), and lists four recommendations containing actions that IDNR believes would address the issues that it identifies in the letter. *See id.* at 2-4. Finally, the March 29th Letter states that IDNR's consultation "is closed, unless the Illinois [EPA] desires additional information or advice related to these recommendations." *Id.* at 4.

Despite Marathon's several requests to meet with IDNR and Illinois EPA after IDNR reviewed Marathon's Addendum so that the parties could further discuss IDNR's positions on the Addendum and answer any additional questions they may have, IDNR instead issued the March 29th Letter without allowing an opportunity to meet again. Marathon's understanding is that IDNR also did not coordinate with Illinois EPA prior to issuing the March 29th Letter. Thus, Marathon began preparing this Response to address IDNR's claims in the March 29th Letter.

This Response addresses each of IDNR's recommendations, including IDNR's assertions underlying each recommendation, from the March 29th Letter. To assist with preparing this Response, both MBI and EA Engineering, Science, and Technology, Inc., PBC ("EA") reviewed the March 29th Letter and prepared reports providing in-depth, technical analyses and responses to certain of IDNR's recommendations. These reports are referenced below and attached hereto. Marathon responds to IDNR's four recommendations.

II. RESPONSE TO IDNR'S RECOMMENDATIONS AND ASSERTIONS IN THE MARCH 29th LETTER

A. IDNR Recommendation #1

In the March 29th Letter, IDNR asserts the following as Recommendation #1:

> *Recommendation #1: The Department recommends the need for a bioassay of the upper thermal tolerance limits of the Illinois Wabash Valley population of the endangered bigeye chub to establish whether the proposed Alternative Thermal Effluent Limits are protective of endangered species known to be present in receiving waters.* The test subjects should be taken from the same population which will be subject to the proposed Alternative Thermal Effluent Limits to address the possibility that different populations of this species may have developed higher or lower tolerances. The research should seek to establish the temperatures which stimulate avoidance behavior (harassment), loss of righting response (harm), onset of spasms (injury), and death. Any proposed bioassay should follow standards and procedures approved by the Department pursuant to the "1070" research permit issued under the *Illinois Endangered Species Protection Act*.

Id. at 4.

In the March 29th Letter, IDNR identifies one published scientific study, Lutterschmidt and Hutchinson (1997)[1], on the thermal tolerance of the Bigeye Chub. *Id.* at 2. However, as Marathon discusses in the Addendum, IDNR acknowledges that this study "is limited to a single test performed on a single animal" and that "a single test on a single animal does not provide a statistical confidence level; reliance on a single study or test is insufficient." *Id.* Moreover, IDNR admits that "this test can be criticized on several grounds[,] such as[] non-regional location of the study area . . . ." *Id.* Despite all of these flaws, IDNR asserts that "the Lutterschmidt/Hutchinson test currently constitutes the best evidence of the thermal upper tolerance limits and such effects upon [the bigeye chub]." *Id.* (internal citations omitted).

[1] "*The Critical Thermal Maximum: Data to Support the Onset of Spasms as the Definitive Endpoint*," William I. Lutterschmidt and Victor H. Hutchinson, Canadian Journal of Zoology, February 1997, pp. 1553-1560.

IDNR also asserts the following:

> The Department also believes that supporting thermal data for the Petition indicate temperatures in the study area which exceed those temperatures tolerated by the bigeye chub. When such temperature exceedances occur during summer months, any bigeye chubs present in Robinson Creek, whether at, below and above Outfall 001, would be forced to vacate the affected reaches of Robinson Creek. If any bigeye chubs in Robinson Creek were unable to escape such temperatures, injury or death from thermal shock would likely occur.
>
> The Department believes that any of the above survival behaviors to avoid thermal exceedances attributed to thermal discharges from Outfall 001 would constitute a "take" (i.e., harass, harm, or injury) which is prohibited by the *Illinois Endangered Species Protection Act* [520 ILCS 10/3].

Id. at 3. Although IDNR cites to Marathon's motion for leave to file the Addendum and the Addendum for presumably the reported temperatures in the study area, IDNR appears to be relying on the Lutterschmidt and Hutchinson (1997) study for its assertion that such temperatures "exceed those temperatures tolerated by the bigeye chub" despite the fact that IDNR also acknowledged that "reliance on a single study or test is insufficient." *Id.* at 2-3. IDNR suggests that "[t]hermal tolerance testing on a larger sample of bigeye chubs taken from a regional watershed, such as the Illinois Wabash River or the Illinois Vermilion River, would provide greater confidence about the thermal tolerance of this endangered fish population," and this is presumably what leads to Recommendation #1. *Id.* at 2, 4.

B. Marathon's Response to IDNR Recommendation #1

For Marathon's response to IDNR's Recommendation #1, Marathon references and incorporates herein the following two reports: C. Yoder and E. Rankin, Midwest Biodiversity Institute, Analysis of and Response to Illinois DNR March 29, 2018 Comment Letter (Aug. 10, 2018), attached hereto as Exhibit 1 (hereafter "MBI Response to March 29th Letter"); G. Seegert and M. Sneen, EA Engineering, Science, and Technology, Inc., PBC, Review of the March 29, 2018 Illinois DNR Letter (Aug. 13, 2018), attached hereto as Exhibit 2 (hereafter "EA Response

to March 29th Letter"). For discussion responding specifically to IDNR Recommendation #1, see Exhibit 1, MBI Response to March 29th Letter, at 1-9, 15-16; Exhibit 2, EA Response to March 29th Letter, at 1-4.

As discussed in the MBI Response to March 29th Letter, in accordance with the Interagency Guidelines (U.S. EPA 1977), the only option available to Marathon was a predictive Type II 316(a) demonstration because of the existing impaired status of the aquatic biota in Robinson Creek. *See* Exhibit 1, MBI Response to March 29th Letter, at 1-9, 15-16. A Type II demonstration utilizes the concept of Representative Important Species ("RIS") where thermal tolerance data for a representative portion of the potential aquatic assemblage under unpolluted conditions reflects the response of the entire assemblage, including species that do not have sufficient thermal tolerance data. *See id.* MBI concludes, in part, that the reconsideration of Bigeye Chub as a candidate RIS does not alter the original conclusions of Marathon's 316(a) demonstration or the summer average and maximum temperatures derived by the Fish Temperature Modeling System ("FTMS"). *See id.* While insufficient thermal tolerance data was available to include Bigeye Chub as a final RIS, MBI's analysis of the influence of acclimation temperature on thermal tolerance endpoints is sufficient to estimate the status of Bigeye Chub among the RIS that have sufficient thermal data and the principal conclusion that this species is covered by other RIS. *See id.*

In addition, MBI concludes that the ability of fish to avoid lethal and otherwise harmful temperatures virtually eliminates the concerns expressed by IDNR about injury and death. *See id.* The assertion that avoidance constitutes a harassment would be significant only in the case of long-term avoidance where substantial areas of habitat are denied to one or more RIS, which is not expected to occur in Robinson Creek downstream from Marathon's Outfall 001. *See id.* The

FTMS and MBI's supplemental analyses show that Bigeye Chub are already protected by Marathon's proposed summer average and maximum temperatures such that avoidance significant enough to constitute a harassment will not occur. *See id.* This is further buttressed by the fact that Bigeye Chub are making an attempt to become established in Robinson Creek under the current thermal regime as part of a range-wide expansion of the species into parts of its former range in Illinois. *See id.*

As discussed in the EA Response to March 29th Letter, EA believes that IDNR should follow the recommendation of Dr. William Lutterschmidt to not consider the Bigeye Chub datum point from the Lutterschmidt and Hutchinson (1997) study. However, if IDNR nevertheless continues to rely on this datum point, EA emphasizes that Bigeye Chub's geographic distributional pattern is what would be expected for a thermally tolerant, warmwater species, not a thermally sensitive, coolwater species. *See* Exhibit 2, EA Response to March 29th Letter, at 1-4. Further, given acclimation temperature greatly affects resultant thermal endpoints, and given the fish in the Lutterschmidt and Hutchinson (1997) study was acclimated at 10°C (50°F) rather than 25°C (77°F), a 15°C (27°F) increase in acclimation temperature from 10°C (50°F) to 25°C (77°F) would result, on average, in an increase of about 6°C (10.8°F) on the resultant endpoints. *See id.* Finally, the collection of the number of Bigeye Chub necessary to conduct the types of bioassays recommended by IDNR is unreasonable given its endangered status, is impractical due to the relatively low occurrence rate of the Bigeye Chub in the surrounding water bodies, and is prohibitively expensive. *See id.*

For these reasons and as further discussed in the MBI Response to March 29th Letter and EA Response to March 29th Letter, Marathon asserts that IDNR's Recommendation #1 is unreasonably burdensome and unnecessary for the Board to determine that the existing

temperature limitations for discharges from Marathon's Robinson Refinery Outfall 001 are more stringent than necessary to assure the protection and propagation of a balanced, indigenous community of shellfish, fish, and wildlife in the receiving waters of the Refinery's discharge from Outfall 001 and, thus, Marathon requests that the Board grant Marathon's Petition to Approve Alternative Thermal Effluent Limitations.

C. IDNR Recommendation #2

In the March 29th Letter, IDNR asserts the following as Recommendation #2:

> *Recommendation #2: The Department recommends the need for a bioassay of representative fish species is warranted to identify the character and likely causes of observed DELTs and to determine whether granting the Alternative Thermal Effluent Limits is likely to increase the incidence and/or severity of DELTs on fish in the receiving waters.*

March 29th Letter, at 4. In support of this recommendation, IDNR states the following:

> The Department further notes that the current thermal discharge levels for Outfall 001 may be a contributing factor to the unusually-high rate of Deformities, Eroded fins, Lesions, and Tumors (DELTs) documented in the aquatic community by Midwest Biodiversity Institute (MBI), environmental contractor for Marathon. Although MBI observed no DELTs on the bigeye chub, the high rate of DELTs on other fish found in the study area indicate an adverse impact to the "balanced indigenous community" of fish, as well as a risk to the bigeye chub. Lesions on fish are often related to bacterial infections; placing additional thermal stress on fish already affected by chemical stressors is likely to aggravate existing pathological conditions. The Department is concerned that the proposed alternative thermal limitation will increase the incidence of DELTS, thus harming the "balanced indigenous community." The Department believes the proposed Alternative Thermal Effluent Limits warrant additional assessment of the impacts to all indigenous fish.

Id. at 3.

D. Marathon's Response to Recommendation #2

In its Recommendation #2 and excerpted supporting discussion above, IDNR again seems to believe that Marathon's requested alternative thermal effluent limitations represent requests to increase its thermal effluent and the thermal regime in Robinson Creek (e.g., "The

Department is concerned that the proposed alternative thermal limitation *will increase* the incidence of DELTS . . .." (emphasis added)). Again, as previously discussed in the Petition, the Addendum, and above, Marathon reiterates that the alternative thermal effluent limitations requested in the Petition are for the *existing* thermal effluent and thermal regime in Robinson Creek as have existed for many years. Marathon's Petition is not driven by process changes that will increase the temperature of the effluent. Notably, too, IDNR does not cite any sources for any of its claims in support of Recommendation #2.

Nevertheless, in response to IDNR's Recommendation #2, Marathon references and incorporates herein Exhibit 1, MBI Response to March 29th Letter, at 9-16; Exhibit 2, EA Response to March 29th Letter, at 3.

Thus, the foregoing analyses support the assessment in Marathon's Bioassessment Report that the DELTs in Robinson Creek are the result of non-thermal pollution influences and the thermal regime of Robinson Creek does not play a direct or synergistic role in the observed biological assemblage impairments. For these reasons, IDNR's Recommendation #2 to perform additional, duplicative, and extensive bioassay analyses and testing is unreasonably burdensome and unnecessary to establish that Marathon's requested alternative thermal effluent limitations will not increase the incidence and/or severity of DELTs on fish in Robinson Creek. Therefore, Marathon asserts that IDNR's Recommendation #2 is unnecessary for the Board to determine that the existing temperature limitations for discharges from Marathon's Robinson Refinery Outfall 001 are more stringent than necessary to assure the protection and propagation of a balanced, indigenous community of shellfish, fish, and wildlife in the receiving waters of the Refinery's discharge from Outfall 001 and, thus, Marathon requests that the Board grant Marathon's Petition to Approve Alternative Thermal Effluent Limitations.

E. IDNR Recommendation #3

In the March 29th Letter, IDNR asserts the following as Recommendation #3:

> *Recommendation #3: The Department recommends that compliance with the Alternative Thermal Effluent Limits should be measured at Outfall 001, or as near as feasible, rather than the proposed point 1.7 miles farther downstream on Robinson Creek, to minimize disruption of the "balanced indigenous community," including the stated-listed bigeye chub.*

March 29th Letter, at 4. In support of this recommendation, IDNR states:

> The Department also questions the location of the stations where compliance will be measured. Given the large segments of Robinson Creek which will be included (1.7 miles and, currently, four miles), further data is needed demonstrating that these distances below Outfall 001 are necessary to achieve compliance with the proposed alternative thermal effluent limitations. The Department believes that thermal compliance measured at Outfall 001, or as close as feasible to the discharge point, will avoid or minimize disruption of the "balanced indigenous community."

Id. at 3-4.

F. Marathon's Response to Recommendation #3

IDNR's Recommendation #3 is based on IDNR's claim that Marathon's Petition, including the Addendum, "does not demonstrate the proposed Alternative Thermal Effluent Limits will protect endangered species present in the receiving waters and will support a balanced indigenous community pursuant to Section 106.1130(e)." *Id.* at 2 (internal citation omitted). However, for the reasons discussed above, including in the MBI Response to March 29th Letter and the EA Response to March 29th Letter, as well as in Marathon's Petition and supporting documentation, Marathon asserts that its requested alternative thermal effluent limitations will assure the protection and propagation of a balanced, indigenous community of shellfish, fish, and wildlife in Robinson Creek and, thus, IDNR's assertion underlying its Recommendation #3 is unfounded. In turn, Recommendation #3 is unfounded.

Marathon's requested point of compliance for the proposed alternative thermal effluent limitations, i.e., a point instream in the vicinity of the IL Route 1 bridge, is a practical and effective instream sampling location. Moreover, this location is consistent with Marathon's NPDES permit's allowed point of compliance for monitoring downstream temperature. *See* NPDES Permit No. IL0004073, at Special Condition 8(D) (modified Sept. 19, 2013), attached as Exhibit 1 to Marathon's Petition filed in this proceeding. Marathon's NPDES permit has allowed monitoring downstream temperature at this point of compliance since at least September 30, 2009. *See* NPDES Permit No. IL0004073, at Special Condition 8(D) (issued Sept. 30, 2009), attached hereto as Exhibit 3. *See also* mixing discussion in EA Response to March 29th Letter, at 3-4.

Also, due to private property along Robinson Creek downstream from Marathon's Refinery, Marathon must negotiate access with private property owners in order to gain access significant enough for transporting, installing, maintaining, and monitoring the instream, continuous temperature sampling equipment. Retaining the compliance point in the vicinity of the IL Route 1 bridge will allow for comparatively reasonable access and flexibility for implementing equipment maintenance and sampling, as compared to a different location that would most likely be located further away from a public roadway and require a larger scope of access across private property.

Thus, IDNR's Recommendation #3 is unreasonably burdensome, especially given Marathon's requested alternative thermal effluent limitations will assure the protection and propagation of a balanced, indigenous community of shellfish, fish, and wildlife in Robinson Creek between Outfall 001 and the requested compliance point in the vicinity of the IL Route 1 bridge.

G. IDNR Recommendation #4

In the March 29th Letter, IDNR asserts the following as Recommendation #4:

> *Recommendation #4: The Department recommends the need for Marathon to seek and obtain an Incidental Take Authorization for the endangered bigeye chub from the Department.*

March 29th Letter, at 4.

H. Marathon's Response to Recommendation #4

IDNR's Recommendation #4 is presumably based on IDNR's claim that Marathon's requested alternative thermal effluent limitations would constitute a "take" under the Illinois Endangered Species Protection Act (520 ILCS 10/3). *See id.* at 2-4. However, for the reasons discussed above, Marathon maintains that its requested alternative thermal effluent limitations will assure the protection and propagation of a balanced, indigenous community of shellfish, fish, and wildlife in Robinson Creek, including the Bigeye Chub. Indeed, the confirmed presence of the Bigeye Chub in Robinson Creek undermines the premise of this recommendation. Accordingly, there will be no "taking" of an endangered or threatened species. Nevertheless, Marathon has scheduled a meeting with IDNR and Illinois EPA, currently set for September 12, 2018, to further discuss this issue.

III. CONCLUSION

For the foregoing reasons, Marathon respectfully requests that Illinois EPA base its Recommendation, and the Board base its final determination, on the information provided in Marathon's Petition, including the Addendum, and this Response, including the MBI Response to March 29th Letter and EA Response to March 29th Letter; that Illinois EPA and the Board

respectfully decline to follow IDNR's recommendations in its March 29th Letter; and that the Board grant Marathon's Petition to Approve Alternative Thermal Effluent Limitations.

Respectfully submitted,

MARATHON PETROLEUM COMPANY LP,

By: /s/ Joshua J. Houser
One of Its Attorneys

Dated: August 14, 2018

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Analysis of and Response to Illinois DNR March 29, 2018 Comment Letter

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BACKGROUND

As part of a consultation process pursuant to the Illinois Endangered Species Protection Act [520 ILCS 10/11], the Illinois Natural Areas Preservation Act [525 ILCS 30/17], and Title 17 Illinois Administrative Code Part 1075, Illinois DNR (IDNR) submitted comments to the Illinois EPA (IEPA) regarding the request for Alternative Thermal Effluent Limitations (Petition) under Section 316(a) by Marathon Petroleum Company LP (MPC) for the Robinson Refinery (Illinois Pollution Control Board (IPCB) Case No. PCB 2018-049). The focus of the IDNR comments is the occurrence of the Illinois state-listed endangered Bigeye Chub *(Hybopsis amblops)* in Robinson Creek. This occurrence is documented in *Biological and Water Quality Assessment of Robinson and Sugar Creeks and Tributaries 2016* (MBI 2017a), which was submitted as a support document for the *Technical Support Documentation for Alternative Thermal Effluent Limitations under Section 316(a) of the Clean Water Act and 35 Ill. Adm. Code 304.141(c) for the Marathon Petroleum Company LP Refinery located in Robinson, Illinois* (MBI 2017b) prepared in support of the MPC 316(a) Petition.

IDNR correctly points out that Bigeye Chub *Hybopsis amblops* was not identified as a state-listed endangered species in the 316(a) Technical Support Document (TSD; MBI 2017b) when it was prepared nor in other documents filed with the Petition before the IPCB. However, MPC filed with the IPCB an Addendum[1] (MBI 2018) to its Petition acknowledging the occurrence of the Bigeye Chub in Robinson and Lamotte Creeks and further elaborating on their probable route of ingress. With the Addendum, MPC added the Bigeye Chub as a *candidate* Representative Important Species (RIS) and a reanalysis of the predictive Type II demonstration concluded that its addition would not change the original conclusions of the 316(a) TSD or the MPC Petition filed with the IPCB. In its letter of March 29, 2018, IDNR responded to the conclusions of the Addendum by claiming that the MPC Petition and supporting documentation do not satisfy Title 35 Illinois Administrative Code Part 106 Subpart K, specifically Section 106.1130(e)(4) provisions concerning "criteria and methodology used to assess whether a balanced indigenous community of shellfish, fish and wildlife will be maintained in the receiving waters and the protection of threatened and endangered species". Specifically, IDNR states:

[1] Addendum to *Technical Support Documentation for Alternative Thermal Effluent Limitations under Section 316(a) of the Clean Water Act and 35 Ill. Adm. Code 304.141(c) for the Marathon Petroleum Company LP Refinery located in Robinson, Illinois* (February 27, 2018) (hereafter "Addendum").

"Based on available information, the Department believes the Petition does not demonstrate the proposed Alternative Thermal Effluent Limits will protect endangered species present in the receiving waters and will support a balanced indigenous community pursuant to Section 106.1130(e). Furthermore, Section 106.1105 requires a demonstration 'to assure the protection and propagation of a balanced, indigenous population...in and on the body of water into which the discharge is to be made'."

In making these claims, IDNR has concluded the following:

1. The content and conclusions of the MPC Type II 316(a) demonstration are in error;

2. The MPC discharge of heat constitutes an incidental "take" under the Illinois Endangered Species Act (17 Ill. Adm. Code 1080) specifically by causing avoidance behavior (harassment), loss of righting response (harm), onset of spasms (injury), and death. This conclusion is based on a single test on Bigeye Chub by Lutterschmidt and Hutchinson (1997) and the terminology used in that study.

3. The MPC thermal discharge from the MPC 001 outfall may be a contributing factor to the unusually-high rate of Deformities, Eroded fins, Lesions, and Tumors (DELTs) documented in the Bioassessment Report (MBI 2017a). Two related claims include:

   A. The high rate of DELTs on other fish found in the study area indicate an adverse impact to the "balanced indigenous community" of fish, as well as a risk to the Bigeye Chub. Lesions on fish are often related to bacterial infections; placing additional thermal stress on fish already affected by chemical stressors is likely to aggravate existing pathological conditions;

   B. The proposed alternative thermal limitation will increase the incidence of DELTs, thus harming the "balanced indigenous community." The Department believes the proposed Alternative Thermal Effluent Limits warrant additional assessment of the impacts to all indigenous fish.

4. The location where compliance will be measured is too far downstream thus compliance needs to be measured as close as feasible to the discharge point to avoid or minimize disruption of the balanced indigenous community.

MBI prepared the following analyses and responses to the IDNR's first two recommendations in its letter of March 29, 2018.

ANALYSIS OF IDNR ASSERTIONS AND RECOMMENDATIONS

The IDNR comment letter questions the validity of the MPC 316(a) Petition and the conclusions of the primary supporting documents (MBI 2017a,b; MBI 2018). The principal concerns of IDNR are with the protection of the Illinois endangered Bigeye Chub and the assurance that a balanced indigenous population of aquatic life will be protected and propagated. MBI provides the following facts and analyses in response to the IDNR letter of March 29, 2018.

First, an important point to be made about MPC's request for alternative thermal effluent limitations under Section 316(a) is that it is for the *existing* thermal effluent and thermal regime in Robinson Creek as it has existed for many years. The predictive Type II demonstration was conducted under that premise – the MPC Petition *is not driven by process changes that will increase the temperature of the effluent.* Also, it is important to understand the difference between MPC's current and proposed maximum thermal effluent limitations as presented in the Petition (see pages 3 and 22, respectively) and summarized in the following table:

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Current °F	60	60	60	90	90	90	90	90	90	90	90	60
Proposed °F	65	65	74	82	88	90	90	90	90	87	85	74
Net Change °F	+5	+5	+14	-8	-2	0	0	0	0	-3	-5	+14

MPC is proposing to keep the current maximum limit of 90°F for the critical summer months of June through September and actually decrease (make more stringent) the current maximum limit of 90°F for the shoulder months of April, May, October and November. MPC is proposing to increase the current maximum limit during only the winter months. MPC is proposing no change to the current not-to-exceed effluent limitation of 3°F above the monthly maximum limit or the one-percent authorization for exceedance of the maximum effluent limitation. MPC proposes a 87.1°F summer average effluent limitation, no such limit currently exists, and the Petition discusses in detail how that new limit is as protective as the 5°F increase limitation it is designed to replace.

The Validity of the 316(a) Demonstration

It is important to clarify that MPC necessarily conducted a predictive Type II 316(a) demonstration as provided for by the Interagency Guidelines (U.S. EPA 1977) because Robinson Creek is biologically impaired and, therefore, the showing of a lack of prior appreciable harm via a Type I demonstration was not possible. These guidelines provide for a predictive Type II demonstration in situations where the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on that body of water cannot be shown due to

other precluding factors, such as non-thermal pollutants and other stressors, as amply demonstrated by the 2016 Bioassessment (MBI 2017a). Furthermore, a Type II demonstration utilizes the concept of Representative Important Species (RIS) where thermal tolerance data for a *representative portion* of the potential aquatic assemblage under unpolluted conditions reflects the response of the entire assemblage, including species that do not have *sufficient* thermal tolerance data. The 316(a) Technical Support Document (MBI 2017b) states:

> "The principal conclusion of the MPC 316(a) demonstration is that the existing discharge of heat by the MPC 001 discharge poses no threat to the eventual recovery of the aquatic biota in Robinson Creek to attain the Illinois General Use for aquatic life. This finding *"will assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on that body of water."* Because the biota in Robinson Creek are currently impaired by multiple non-thermal stressors both upstream and downstream of the MPC 001 outfall, a predictive demonstration was undertaken. This is in keeping with the *Interagency 316(a) Technical Guidance Manual and Guide for Thermal Effects Sections of Nuclear Facilities Environmental Impact Statements* (U.S. EPA 1977). The predictive demonstration consisted of using the Fish Temperature Modeling System (FTMS; Yoder 2008) to determine protective "true summer" (June 16-September 15) maximum and average temperatures for a list of Representative Important Species (RIS) and comparing the results to the measured and modeled summer temperature regime. While it is true the impaired status of Robinson Creek precludes a Type I demonstration (no prior appreciable harm), recent results show the creek to be on a trajectory of improvement in response to abatement of non-thermal chemical impacts."

316(a) Technical Support Document (MBI 2017b), at 2. While this conclusion was reached without formally including Bigeye Chub as a candidate RIS, an Addendum (MBI 2018) was developed to properly account for its occurrence in Robinson Creek. Based on the addition of Bigeye Chub to the candidate RIS and consideration of available thermal tolerance data, the following conclusion was reached:

> ". . . the occurrence of Bigeye Chub in Robinson Creek does not change the conclusions of the 316(a) technical evaluation nor the alternative thermal effluent limitations that are being requested by MPC. Insufficient thermal tolerance data exists to include Bigeye Chub as a final RIS, but the data that exists for other species suggests it is in the intermediate range of thermal tolerance among the final RIS that were included in the FTMS outputs upon which the alternative thermal effluent limitations are based."

Addendum, at 6-7. The Addendum includes an analysis of the availability of sufficient thermal tolerance data and whether the Bigeye Chub was represented by the RIS with thermal tolerance data. See Addendum, at 4-5.

Only two references about the thermal tolerance of Bigeye Chub were found, Lutterschmidt and Hutchinson (1997) and Bush et al. (1974). In its letter of March 29, 2018, IDNR writes (internal citations omitted):

> "Published scientific research on the thermal tolerance of the **bigeye chub** is limited to a single test performed on a single animal. While this test can be criticized on several grounds such as, non-regional location of the study area, the Lutterschmidt/Hutchinson test currently constitutes the best evidence of the thermal upper tolerance limits and such effects upon this species. Among these effects are spasm and the inability of the **bigeye chub** to "right" itself (i.e., to turn upright) when in waters with upper thermal temperatures."

The IDNR statement is in reference to the Lutterschmidt and Hutchinson (1997) study which is evaluated in the Addendum. In brief, MPC concluded that the Lutterschmidt and Hutchinson (1997) thermal tolerance data for the Bigeye Chub was insufficient to include in the FTMS because the Bigeye Chub data consisted of a single test on a single fish, but most importantly it was conducted at an unrepresentative acclimation temperature. The Addendum explains the significance of the acclimation temperature and the rationale for not including Bigeye Chub as an RIS as follows:

> "Candidate RIS that lack sufficient thermal tolerance data need to be covered by other RIS that have such data. The thermal tolerance data that is available for Bigeye Chub consists of a single lethal endpoint test consisting of a single observation at an unrepresentative acclimation temperature. Lutterschmidt and Hutchinson (1997) listed critical thermal maximum test endpoints of 30.1°C (86.2°F) and 31.7°C (89.1°F) at an acclimation temperature of 10°C (50°F). This data is regarded as insufficient to use in the FTMS given the low acclimation temperature that is not representative of critical summer conditions. We accepted thermal test data at acclimation temperatures of 25°C (77°F) as the *minimum* that is representative of critical summer conditions. Based on an examination of the influence of the acclimation temperature on the lethal endpoints for other species in Appendix B-1 of the 316(a) technical evaluation, had the Bigeye Chub tests been conducted at an acclimation temperature of 25°C (77°F) or higher, the lethal endpoint would have likely been in the 33-36°C (91.4-96.8°F) range."

Addendum, at 4-5. IDNR does not explain how the test performed by Lutterschmidt and Hutchinson (1997) at the acclimation temperature of 50°F (10°C) can constitute the best evidence of thermal tolerance of Bigeye Chub during the summer season when ambient water temperatures in Robinson Creek are 25-30°F (13.9-16.7°C) warmer.

The only other available reference to the thermal tolerance of Bigeye Chub is by Bush et al. (1974) who listed it ". . . as expected to be lost from the Tennessee River system if temperatures exceeded 34°C (93.4°F)"; however, they did not provide the specific tolerance endpoints used to reach that conclusion. This reference, too, is insufficient to add Bigeye Chub to the final RIS used in the FTMS analyses.

The Addendum refers to an examination of acclimation temperatures and lethal endpoints in Appendix B-1 of the 316(a) Technical Support Document for other Cyprinidae that had a more

complete set of acclimation and thermal test endpoints. To demonstrate the relationship between thermal test endpoints and acclimation temperature, data from Appendix Table B-1 was retrieved and included in Tables 1 and 2. Both lethal and upper avoidance test endpoints for other small-bodied Cyprinidae are included. The results are arrayed by six (6) increments of acclimation temperatures between 5°C (41°F) and 30°C (86°F) for the lethal tests and in eight (8) increments of acclimation temperatures between 12°C (53.6°F) and 33°C (91.4°F) for the upper avoidance tests. The average difference in lethal temperatures was derived using data across an acclimation temperature range of 10°C (50°F) through 25°C (77°F). The average difference in upper avoidance temperatures was derived using data across an acclimation temperature range of 12°C (53.6°F) through 27°C (80.6°F).

This analysis was done to demonstrate the effect of increased acclimation temperatures on resultant endpoints. The comparisons in Tables 1 and 2 clearly show the influence of acclimation temperature on both the lethal and upper avoidance test endpoints – the test endpoints increase with test acclimation temperature, especially over the range of interest (10°C to 25°C; 50°F to 77°F). We used 10°C (50°F) and 25°C (77°F) as the basis for the comparison for the lethal tests because the former is the single acclimation temperature for the single Bigeye Chub test by Lutterschmidt and Hutchinson (1997) and the latter is the lowest acclimation temperature for accepting an endpoint in the FTMS analysis. The upper avoidance tests were staged in successive increments in order to demonstrate the influence of acclimation temperature on the species test end points. One test used different acclimation temperatures so those closest to the 10°C (50°F) and 25°C (77°F) values were used, 12°C (53.6°F) and 27°C (80.6°F). The average difference between test acclimation temperatures for the lethal endpoints was 4.2°C (7.6°F) and 10.7°C (19.3°F) for the upper avoidance tests. Thus, and without considering the already stated weakness of the Lutterschmidt and Hutchinson (1997) Bigeye Chub test, the onset of spasms at a 25°C (77°F) acclimation would have been 36.1°C (97.0°F) and the more conservative loss of righting response would have been 34.5°C (94.1°F). The Addendum (MBI 2018) estimated a range of 33-36°C (91.4°F-96.8°F). The results of this analysis are consistent with the acclimation/lethal tolerance relationship described in the literature.

Fry et al. (1971) stated that for every 3°C (5.4°F) increase in acclimation the lethal tolerance increases by 1°C (1.8°F) up to the point where an organism can no longer acclimate, which for eurythermal (i.e., warmwater) fish species is >34°C (93.2°F; Hokanson 1977). Based on the Fry et al. (1971) formula, increasing the acclimation temperature by 15°C (27°F) (i.e., from 10°C (50°F) to 25°C (77°F)) would increase the resultant endpoints by 5°C (9°F). Using an adjustment of 5°C (9°F) for Bigeye Chub, the onset of spasms at a 25°C (77°F) acclimation would be 36.7°C (98.1°F) and the more conservative loss of righting response 35°C (95°F); each are within 0.5-0.6°C of the above estimates. Using the loss of righting response as a more conservative value places the thermal tolerance of Bigeye Chub between White Sucker *Catostomus commersonii* and Silverjaw Minnow *Notropis buccatus* in terms of the Robinson Creek RIS with sufficient thermal tolerance data to include in the FTMS analysis (see Table 11 in the 316(a) Technical Support Document). Based on the foregoing analysis, the thermal response of Bigeye Chub is nested within the thermal response of species that were used in the FTMS analysis.

Table 1. *Lethal endpoints for selected Cyprinidae determined by tests with standardized acclimation temperatures.*

Species	Acclimation °C (°F)							Source (Location)
	5 (41)	10 (50)	15 (59)	20 (68)	25 (77)	30 (86)	Diff.[a]	
Golden Shiner	--	29.3 (84.7)	33.7 (92.7)	31.9 (89.4)	33.2 (91.8)	34.7 (94.5)	3.9 (7.0)	Hart 1947 (Canada)
Emerald Shiner	23.2 (73.8)	26.7 (80.1)	28.9 (84.0)	30.7 (87.3)	30.7 (87.3)	--	4.0 (7.2)	Hart 1947 (Canada)
Emerald Shiner	26.7 (80.1)	28.6 (83.5)	30.3 (86.5)	31.0 (87.8)	31.0 (87.8)	--	2.4 (4.3)	Brett 1944 (Canada)
Spottail Shiner	26.9[b](80.4)	27.0[c](80.6)	26.7[d](80.1)	--	33.1[e](91.6)	33.1 (91.6)	6.1 (11.0)	Stauffer et al. 1984 (Virginia)
Creek Chub	24.7 (76.5)	27.3 (81.1)	29.3 (84.7)	30.3 (86.5)	30.3 (86.5)	--	3.0 (5.4)	Brett 1944 (Canada)
Fathead Minnow	--	28.2 (82.8)	--	31.7 (89.1)	--	33.2 (91.8)	5.0[f](9.0)	Hart 1947 (Canada)
Bluntnose Minnow	26.0 (78.8)	28.3 (82.9)	30.6 (87.1)	31.7 (89.1)	33.3 (91.9)	--	5.0 (9.0)	Hart 1947 (Canada)
Avg. Difference							**4.2 (7.6)**	
Bigeye Chub	--	31.7 (89.1)	--	--	--	--	--	Lutterschmidt & Hutchinson 1997 (OK)

[a] Difference between 10°C (50°F) and 25°C (77°F) acclimation; [b] 6°C (42.8°F) acclimation; [c] 12°C (53.6°F) acclimation; [d] 18°C (64.4°F) acclimation; [e] 24°C (75.2°F) acclimation; [f] Difference between 10°C (50°F) and 30°C (86°F) acclimation;.

Table 2. *Avoidance endpoints for selected Cyprinidae determined by tests with standardized acclimation temperatures.*

Species	Acclimation °C (°F)									Source (Location)
	12 (53.6)	15 (59.0)	18 (64.4)	21 (69.8)	24 (75.2)	27 (80.6)	30 (86.0)	33 (91.4)	Diff.[a]	
Spotfin Shiner	27.0 (80.6)	24.0 (75.2)	27.0 (80.6)	27.0 (80.6)	30.0 (86.0)	33.0 (91.4)	36.0 (96.8)	36.0 (96.8)	6.0 (10.8)	Cherry et al. 1975 (Virginia)
Rosyface Shiner	21.0 (69.8)	24.0 (75.2)	21.0 (69.8)	27.0 (80.6)	27.0 (80.6)	33.0 (91.4)	33.0 (91.4)	34.0 (93.2)	12.0 (21.6)	Cherry et al. 1975 (Virginia)
Fathead Minnow	18.0 (64.4)	24.0 (75.2)	24.0 (75.2)	27.0 (80.6)	30.0 (86.0)	33.0 (91.4)	32.0 (89.7)	--	15.0 (27.0)	Cherry et al. 1975 (Virginia)
Bluntnose Minnow	19.3 (66.7)	20.9 (69.6)	21.9 (71.4)	23.2 (73.8)	26.4 (79.5)	27.9 (82.2)	29.0 (84.2)	--	8.6 (15.5)	Cherry et al. 1975 (Virginia)
Central Stoneroller	21.0 (69.8)	24.0 (75.2)	24.0 (75.2)	27.0 (80.6)	30.0 (86.0)	33.0 (91.4)	33.0 (91.4)	--	12.0 (21.6)	Cherry et al. 1975 (Virginia)
Average Difference									**10.7 (19.3)**	

[a] Difference between 12°C (53.6°F) and 27°C (80.6°F) acclimation.

IDNR asserts that the existence of Bigeye Chub is threatened by the effluent temperature regime from the MPC 001 outfall as follows:

> "The Department also believes that supporting thermal data for the Petition indicate temperatures in the study area which exceed those temperatures tolerated by the bigeye chub. When such temperature exceedances occur during summer months, any bigeye chubs present in Robinson Creek, whether at, below and above Outfall 001, would be forced to vacate the affected reaches of Robinson Creek. If any bigeye chubs in Robinson Creek were unable to escape such temperatures, injury or death from thermal shock would likely occur."

The first statement is entirely reliant on the Lutterschmidt and Hutchinson (1997) study results, which are insufficient for the reasons discussed above. It is also contradicted by the preceding analysis of the relationship between acclimation and test endpoint temperatures. Employing a literal interpretation of the only thermal endpoint available for Bigeye Chub (Lutterschmidt and Hutchinson (1997)) under the conditions of the 316(a) demonstration is not only unwarranted and inaccurate, it contravenes the integrity of the FTMS analysis in support of the Type II demonstration. The above analyses demonstrate that lethal and upper avoidance endpoints *always* increase with acclimation temperature in the range of 10°C (50°F) and 25°C (77°F) for eurythermal fish species. There is little doubt about Bigeye Chub being considered a eurythermal species as opposed to a mesothermal or stenothermal species. The Addendum points out this fact:

> "Further, the geographical distribution of Bigeye Chub in the U.S. ranges from the southern parts of the Lake Erie drainage in Ohio and Michigan southward to the Ohio River basin from New York to eastern Illinois, south to the Tennessee River, Georgia, and Alabama, the Ozarks of southern Missouri and northern Arkansas, and northeastern Oklahoma[]. This clearly shows it to be a warmwater species with no apparent requirement for cool water."

Addendum, at 5 (citing https://nas.er.usgs.gov/queries/factsheet.aspx?SpeciesID=547).

Based on the analysis of the comparatively low frequency of stressful temperatures that approach and only slightly exceed the upper thermal tolerance of the most sensitive RIS (upon which the summer average and maximum temperatures being requested by MPC are based), any avoidance is expected to be infrequent and for only brief periods of time in terms of hours, not days or weeks. Certainly, long-term avoidance where substantial areas of habitat are denied to one or more RIS is not consistent with the "protection and propagation of a balanced indigenous population," and evidence of lethality is likewise unacceptable. However, neither are expected to occur in Robinson Creek downstream from the MPC 001 outfall. IDNR's claim about injury or death from thermal shock is invalidated by the FTMS results and more importantly by available knowledge about how fish behave when confronted with near lethal temperatures. Simply put, fish can and do avoid lethal temperatures provided there is a place to retreat, which is available in an open system such as a stream or river. Fish are able to

increase their tolerance of high temperatures, i.e., gain of heat tolerance, more quickly than they can increase their tolerance of low temperatures, and upper temperature tolerances of most North American fishes are well above ambient temperatures in their natural habitats (Beitinger et al. 2000). A result of the wealth of fish-temperature research during the past 40+ years is the observation that fish possess acute temperature discrimination abilities and use behavior to avoid or rapidly escape thermally hostile areas (Beitinger et al. 2000). The abilities of fish to avoid lethal and otherwise harmful temperatures virtually eliminates the concerns expressed by IDNR about injury and death. The assertion that avoidance constitutes a harassment under the Illinois endangered species law and regulations would seem to be significant only in the case of long-term avoidance that would preclude the ability of Bigeye Chub to become established in Robinson Creek. Clearly the FTMS and the new analyses herein show that Bigeye Chub are already protected by the proposed summer average and maximum temperatures requested by MPC such that avoidance significant enough to constitute a harassment simply does not occur. This is further buttressed by the fact that Bigeye Chub are making an attempt to become established in Robinson Creek as part of a rangewide expansion of the species into parts of its former range in Illinois (MBI 2018).

Temperature and DELTs

IDNR expresses concern about the incidence of deformities, erosions, lesions, and tumors (DELT) or "DELTs" on fish in Robinson Creek as documented in the Bioassessment Report (MBI 2016b):

> "The Department further notes that the current thermal discharge levels for Outfall 001 may be a contributing factor to the unusually-high rate of Deformities, Eroded fins, Lesions, and Tumors (DELTs) documented in the aquatic community by Midwest Biodiversity Institute (MBI), environmental contractor for Marathon. Although MBI observed no DELTs on the **bigeye chub**, the high rate of DELTs on other fish found in the study area indicate an adverse impact to the "balanced indigenous community" of fish, as well as a risk to the **bigeye chub.** Lesions on fish are often related to bacterial infections; placing additional thermal stress on fish already affected by chemical stressors is likely to aggravate existing pathological conditions. The Department is concerned that the proposed alternative thermal limitation will increase the incidence of DELTS, thus harming the "balanced indigenous community." The Department believes the proposed Alternative Thermal Effluent Limits warrant additional assessment of the impacts to all indigenous fish."

The IDNR assertion that the incidence of DELTs is evidence of an adverse impact to a "balanced indigenous community" of fish is essentially correct. MPC has acknowledged this in the Bioassessment Report (MBI 2017a) by reporting it as an indicator of a non-thermal impairment in Robinson Creek. However, the IDNR assertion that the proposed alternative thermal effluent limitation will increase the incidence of DELTs is incorrect. The IDNR request for additional testing related to the alternative thermal effluent limitation request is unnecessarily duplicative of what has already been concluded by the 316(a) Technical Support Document and the

Bioassessment Report taken together. Further, the Bioassessment Report identified the culprit stressors associated with the impairments and the DELTs via a documented stressor identification process. The fact that temperature was not included as a stressor is significant especially with the extent of thermal effects analysis that was conducted. The 316(a) demonstration was necessarily conducted as a predictive Type II demonstration as described by the 316(a) Technical Support Document:

> "Because the biota in Robinson Creek are currently impaired by multiple non-thermal stressors both upstream and downstream of the MPC 001 outfall, a predictive demonstration was undertaken. This is in keeping with the *Interagency 316(a) Technical Guidance Manual and Guide for Thermal Effects Sections of Nuclear Facilities Environmental Impact Statements* (U.S. EPA 1977). The predictive demonstration consisted of using the Fish Temperature Modeling System (FTMS; Yoder 2008) to determine protective "true summer" (June 16-Septmber 15) maximum and average temperatures for a list of Representative Important Species (RIS) and comparing the results to the measured and modeled summer temperature regime. While it is true the impaired status of Robinson Creek precludes a Type I demonstration (no prior appreciable harm), recent results show the creek to be on a trajectory of improvement in response to abatement of non-thermal chemical impacts."

316(a) Technical Support Document, at 2. The recognition that a Type II demonstration would be pursued was duly described in the Early Screening submittal[2] and carried to completion by the 316(a) Technical Support Document and incorporation of the Bigeye Chub into the analysis through the Addendum, which did not alter the conclusions of the 316(a) Technical Support Document. Because MPC has fulfilled all of the requirements under the Illinois 316(a) regulations in 35 Ill. Adm. Code Part 106 Subpart K, as well as those prescribed by the 1977 Interagency 316(a) guidelines, no further assessment is needed.

In response to the IDNR assertion that elevated temperature plays an essential role in the highly elevated incidence of DELTs in Robinson Creek downstream from the MPC 001 outfall and Marathon Creek, MBI performed additional review and analysis of that possible relationship both via a literature review and the stream and river databases in MBI ECOS for Ohio and Illinois. For the latter, the Illinois data was restricted to MBI data only because neither IEPA nor IDNR collects or uses data on external anomalies including DELTs (MBI 2013).

Literature Review

The extant literature on external anomalies, including methods of data collection, how they are used as assessment endpoints, and what types of stressors they indicate, is based largely on work by Ohio EPA. However, most organizations that use a fish Index of Biotic Integrity (IBI) as originally envisioned by Karr et al. (1986) follow that original guidance by including a metric

[2] Section 106.1115 Early Screening Submittal submitted by MPC to IEPA on March 11, 2016.

pertaining to symptoms of disease on fish[3]. The narrowing of this metric to DELTs was done to exclude potentially confounding symptoms of disease caused by natural factors (e.g., parasites, blackspot) even though some of these can be exacerbated by certain types of pollution. DELTs have been shown to be more specific and reliable for determining categorical stressors (e.g., toxicity, organic enrichment, nutrient enrichment) as first demonstrated by Yoder and Rankin (1995) and later by Yoder and DeShon (2003). As a result, fish IBIs must include a DELT metric or a provision to use the occurrence of DELTs as a scoring modifier. This and the recommendation that IEPA and IDNR add a DELT metric to their fish IBI (MBI 2013) are reasons that DELTs were included in the bioassessment of Robinson and Sugar Creeks.

The literature on the causes of external anomalies is based on the larger context of fish disease and pathology. Hockett and Mundahl (1989) was the only study that MBI could find which tested the effect of disease on fish thermal tolerance. In their study, they found no effect from the incidence of blackspot on the lethal thresholds for three species of Cyprinidae (Bluntnose Minnow *Pimephales notatus,* Spotfin Shiner *Cyprinella spiloptera,* and Striped Shiner *Luxilis chrysocephalus*), all of which are final RIS for the MPC 316(a) demonstration. Snieszko (1974) is perhaps the seminal work that relates symptoms of disease in fish, such as external anomalies, to environmental factors. While temperature is one of the controlling factors discussed by Snieszko (1974), there is no mention of high temperature as either a singular cause or as a co-factor in increased anomalies on fish. In contrast, there is mention of low temperatures as being a co-factor in some fish diseases. MBI conducted a reasonable search for additional studies that showed elevated temperatures as a controlling factor in the incidence of DELTs observed in Robinson Creek and found none. This includes the several hundred thermal references that have been examined over the past 40 years in building the FTMS thermal effects database. If elevated temperature was the contributing factor as IDNR asserts, it would most certainly have been apparent in the literature by now.

Field Based Observations

We queried the extensive Ohio and MBI Illinois databases where DELTs are consistently recorded and across a wide range of stream and river sizes and environmental and stressor gradients. The analysis was restricted to a class of small streams <50 mi.^{2} that are similar in size to Robinson and Sugar Creeks. The frequency of DELTs was plotted against the maximum temperatures measured within the same summer-fall index period at 3487 sites with drainage areas <50 mi.^{2} and with the data collected between 1979 and 2017. DELTs were then plotted against the maximum temperature at each site for the maximum incidence of DELTs on fish in each sample (Figure 1; lower). A smoothing function was added that shows the frequency of samples at 1°C (1.8°F) increments of temperature to reveal the relative frequency of samples collected by temperature (Figure 1; upper). The 87.1°F (30.6°C) and 90°F (32.2°C) summer average and maximum alternative temperature limits being requested by MPC for Robinson Creek was added to each to provide a visual depiction of the incidence of DELTs both below and above these temperatures. The results show elevated DELTs at sites with temperatures well

[3] Karr et al. (1986) specified metric 12 – "Proportion of individuals with disease, tumors, fin damage, and skeletal anomalies".

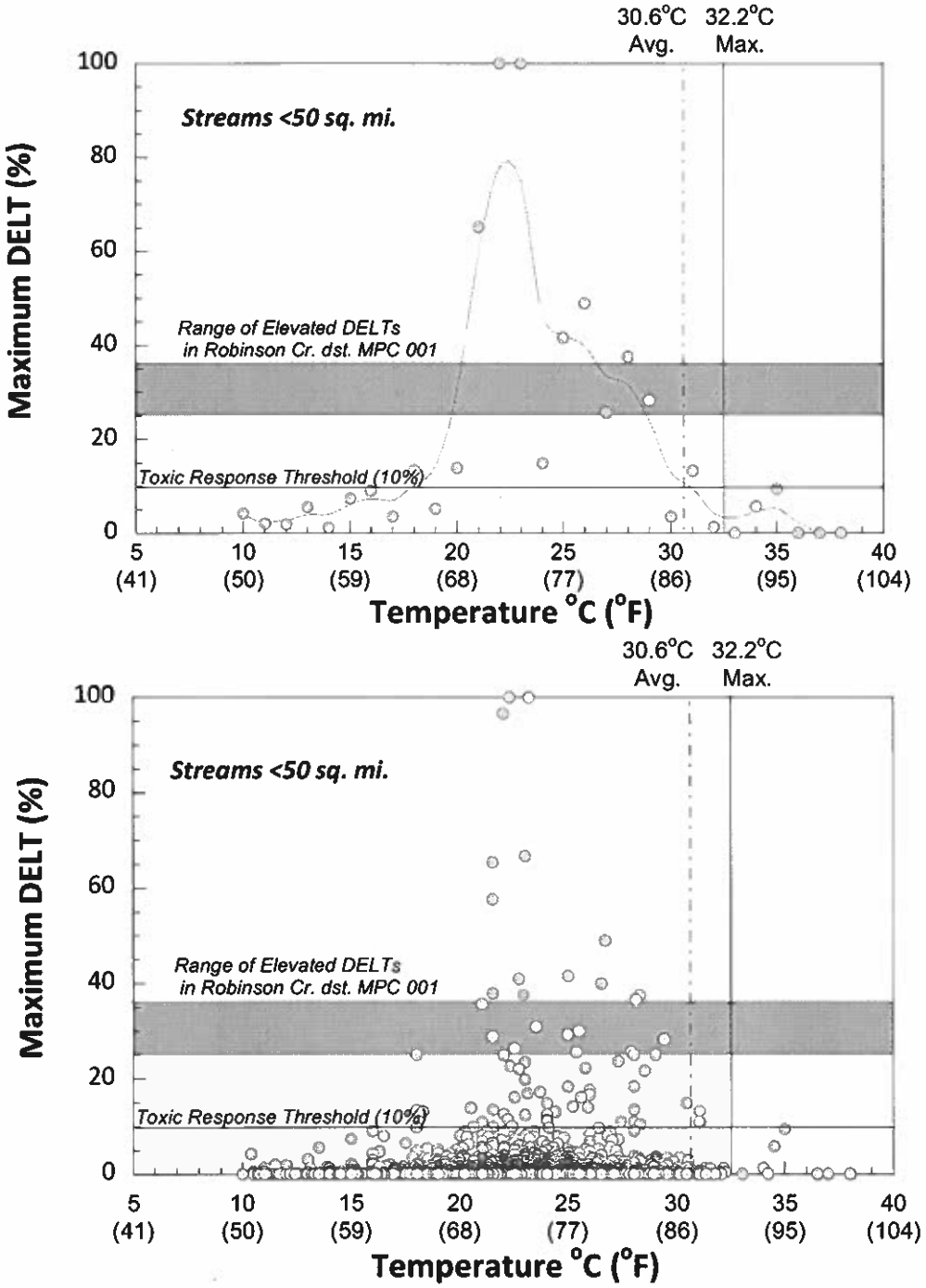

***Figure 1**. The maximum incidence of DELT anomalies on fish observed at more than 3500 stream sites draining <50 mi.² in Ohio and Illinois, 1979-2017 against the maximum temperature at each site with a summer-fall seasonal index period (lower) and maximum %DELT by increments of 1°C with a smoothing function that represents the number of samples (upper). The %DELT toxic response threshold of Yoder and DeShon (2003) and the range of the most elevated %DELT observed in Robinson Creek downstream from RC05 in 2016 are shown. The average and maximum summer temperatures derived from the MPC 316(a) demonstration are also shown.*

Table 3. *Results for fish IBIs and macroinvertebrate ICI (narrative rating used for qualitative samples) and macroinvertebrate IBI (mIBI) used by Ohio and Illinois at 65 sites (Illinois sites = Basin Code 95) with maximum summer temperatures >30°C (86°F) with the average and maximum %DELTs, and other selected metrics as indicators of categorical types of pollutional impacts arranged from highest to lowest temperature. Attainment of the Ohio and Illinois numeric biocriteria and exceedances of various thresholds for the selected indicator metrics are highlighted in color (see legend at bottom of table).*

						Fish Assemblage					Macroinvertebrate Assemblage							Temp.
Basin	Stream	River_Stream Name	RM↓	Drain. Area	Year	Rel. No.	IBI	Sens. Sp	DELT_Mean	DELT_Max	QUALEPT	ICI/mIBI	%Cricotopus	%Toxic Tolerant	%P. illinoense	% Org. Tolerant	Abundance	Max. °C
17	468	Hurford Run	2.10	4.2	1998	27.0	14	0	0.0	0.0	1.0	6.0	1.5	0.8	0.8	97.0	10162.0	37.0
17	468	Hurford Run	1.80	4.3	1998	3.0	12	0	0.0	0.0	0.0	2.0	0.0	17.3	17.3	29.0	655.0	37.0
14	018	Dicks Creek	3.00	42.0	1995	148.3	25	3.5	5.4	9.4	4.0	12.0	15.8	56.6	56.6	15.7	6454.0	35.0
17	553	River Styx	0.80	28.0	1993	182.3	23	0.5	4.3	5.7	2.0	P	Qualitative Data Only					34.5
95	665	Rock Run Creek	5.40	5.5	2012	102.0	32	0	0.0	0.0	2.0	10.6	0.0	0.0	0.0	89.6	298.0	34.2
02	418	Grave Creek	3.20	9.3	1998	359.0	23	1	0.6	1.2	7.0	MG	Qualitative Data Only					34.0
04	055	Middle Fork Gordon Creek	0.80	13.5	1984	286.0	20	0	0.0	0.0	2.0	MG	Qualitative Data Only					33.0
95	840	Arlington Heights Branch Salt Creek	1.50	10.0	2010	300.8	28	0	0.2	0.5	1.0	31.2	5.7	0.3	0.3	50.5	315.0	32.2
14	018	Dicks Creek	4.20	39.0	2000	383.0	35	3	0.7	1.4	6.0	30.0	46.2	9.6	9.6	4.2	5428.0	32.1
08	119	Tnb. to Leslie Run (Roshel)	1.00	0.5	1985	732.7	30.7	0	0.2	0.5	5.0	MG	Qualitative Data Only					32.0
14	050	Spring Creek	1.00	26.0	1983	2932.0	44	5.3	0.1	0.2	14.0	MG	Qualitative Data Only					32.0
14	018	Dicks Creek	3.90	39.0	2000	1355.0	32	3.5	0.0	0.0	1.0	18.0	52.8	5.5	5.5	18.7	4026.0	32.0
14	018	Dicks Creek	3.70	41.0	2000	1086.0	36	6	0.0	0.0	4.0	20.0	52.0	5.8	3.5	18.3	2748.0	32.0
08	119	Tnb. to Leslie Run (Roshel)	0.90	0.5	1985	0.0	12	0	0.0	0.0	5.0	MG	Qualitative Data Only					32.0
02	245	Clover Groff Ditch	7.80	2.0	2011	727.5	38	1	0.0	0.0	1.0	P	Qualitative Data Only					32.0
02	418	Grave Creek	5.30	6.0	1998	75.0	23	0	0.0	0.0	2.0	P	Qualitative Data Only					32.0
17	468	Hurford Run	1.80	4.3	1986	0.0	12	0	0.0	0.0	0.0	VP	Qualitative Data Only					32.0
17	468	Hurford Run	1.80	4.3	1985	0.0	12	0	0.0	0.0	0.0	VP	Qualitative Data Only					32.0
02	721	Shawnee Creek	0.30	2.2	2002	1880.0	46	1	0.0	0.0			No Macroinvertebrate Data					32.0
14	018	Dicks Creek	5.00	17.0	2000	2000.0	40	3	0.0	0.0	5.0	24.0	0.0	0.0	0.0	0.0	4547.0	31.7
95	855	Trib to Salt Creek	4.00	4.0	2010	439.0	24	0	0.9	1.2	2.0	28.0	0.3	7.0	7.0	11.7	316.0	31.5
04	137	Hagerman Creek	12.20	3.6	1983	132.0	21	0	0.0	0.0			No Macroinvertebrate Data					31.5
22	001	Wabash River	489.90	49.0	1999	138.0	21	0	0.0	0.0	2.0	14.0	0.1	0.0	0.0	73.2	1967.0	31.3
04	055	Middle Fork Gordon Creek	2.80	9.0	1984	324.0	29	0	0.0	0.0	2.0	MG	Qualitative Data Only					31.3
95	870	Spring Brook	2.50	10.0	2010	1449.8	36	0	1.3	1.4	2.0	18.3	0.0	1.6	0.0	70.1	311.0	31.2
95	668	Lily Cache Creek	10.90	11.1	2012	462.0	26	0	0.4	0.4	1.0	26.1	0.0	0.0	0.0	65.1	281.0	31.2
14	018	Dicks Creek	2.50	44.7	1987	292.5	21.3	1	9.9	13.3			No Macroinvertebrate Data					31.0
14	018	Dicks Creek	2.70	42.5	1987	530.0	26.7	1.7	5.7	11.0	1.0	10.0	23.6	3.2	2.3	66.0	8458.0	31.0
17	550	Chippewa Creek	19.20	23.0	1983	287.1	24	0.3	0.3	0.7	2.0	4.0	0.0	1.0	0.0	91.4	9157.0	31.0
02	012	Big Run	4.80	0.5	2005	1194.4	42	0	0.1	0.2			No Macroinvertebrate Data					31.0
02	085	Sycamore Creek	4.20	18.6	1984	4188.0	31	1.5	0.0	0.0	6.0	F	Qualitative Data Only					31.0
02	245	Clover Groff Ditch	5.50	3.8	2011	608.0	40	0	0.0	0.0	2.0	P	Qualitative Data Only					31.0
02	253	North Branch Crosses Run	0.20	1.5	1995	22.0	14	0	0.0	0.0	0.0	0.0	36.5	39.2	39.2	11.2	1184.0	31.0
17	553	River Styx	0.70	28.0	1983	757.0	32	1	0.0	0.0	3.0	10.0	0.0	4.3	1.7	84.0	19131.0	31.0
17	553	River Styx	0.10	28.4	1983	411.0	18.7	1	0.0	0.0	0.0	12.0	0.8	5.3	5.3	85.6	19595.0	31.0
12	206	Slate Run	4.10	39.0	1998	1743.8	28	3	0.0	0.0	12.0	44.0	0.5	0.5	0.0	7.0	2023.0	30.9

Table 3. *(continued)*

						Fish Assemblage					Macroinvertebrate Assemblage							Temp.
Basin	Stream	River_Stream Name	RM	Drain. Area	Year	Rel. No.	IBI	Sens. Sp	DELT_Mean	DELT_Max	QUALEPT	ICT*/mIBI	%Cricotopus	%Toxic Tolerant	%P. illinoense	% Org. Tolerant	Abundance	Max.°C
04	114	South Powell Creek	14.10	13.5	1999	1084.4	29	0	0.4	0.9			No Macroinvertebrate Data					30.7
95	668	Lily Cache Creek	0.36	46.0	2012	66.0	24	1		3.0	3.0	32.2	0.0	0.0	0.0	0.0	0.0	30.5
95	664	Springbrook Creek	1.20	12.3	2012	130.0	26	0		1.5	3.0	24.5	0.0	0.4	0.4	63.6	261.0	30.5
04	052	Gordon Creek	6.80	37.0	1984	2806.5	23	1	0.4	0.8	6.0	26.0	0.0	1.4	0.0	51.2	1775.0	30.5
04	143	Town Creek	12.50	31.0	1983	642.5	18.7	0.3	0.0	0.1	0.0	4.0	1.3	0.0	0.0	96.5	5279.0	30.5
02	133	Crosses Run	2.00	1.5	2010	969.0	40	0.5	0.0	0.0	1.0	22.0	0.0	5.6	0.0	52.5	1997.0	30.5
02	245	Clover Groff Ditch	6.50	2.9	2011	347.5	38	0	0.0	0.0	2.0	P	Qualitative Data Only					30.5
17	733	Rocky Fork Mohican River	14.60	15.3	1993	90.9	16	0	10.2	15.0			No Macroinvertebrate Data					30.4
14	018	Dicks Creek	4.60	17.0	1987	693.5	38.7	2	0.9	1.4	10.0	30.0	15.0	2.8	1.1	34.8	3115.0	30.4
23	046	Trib to Rossmoyne Cr at RM 1.17	1.00	2.6	2011	834.0	36	0	0.0	0.0	5.0	F	Qualitative Data Only					30.4
17	733	Rocky Fork Mohican River	14.45	15.6	1993	6.0	12	0	0.0	0.0	0.0	14.0	0.0	0.0	0.0	98.8	9335.0	30.4
95	840	Arlington Heights Branch Salt Creek	0.25	12.7	2010	493.0	22	0	0.2	0.3	1.0	31.2	0.3	0.0	0.0	75.2	313.0	30.2
05	021	Sycamore Creek	18.90	16.5	2001	1422.5	26	2	0.2	0.2	11.0	G	Qualitative Data Only					30.2
95	950	Spring Brook	0.75	6.8	2006	628.1	15	0.8	0.9	3.5			No Macroinvertebrate Data					30.1
05	035	Broken Sword Creek	25.50	32.0	2001	704.0	26	1	0.0	0.0	13.0	54.0	1.0	0.0	0.0	17.9	6440.0	30.1
14	018	Dicks Creek	4.40	39.0	1995	1222.0	41	7	1.2	1.4	4.0	P	Qualitative Data Only					30.0
95	980	East Branch DuPage River	19.30	16.0	2012	504.0	29	1	0.4	0.6	4.0	30.1	6.4	13.3	12.38	28.3	315	30.0
17	267	Otter Fork Licking River	13.90	6.4	2000	1366.0	42	3.5	0.1	0.2	10.0	G	Qualitative Data Only					30.0
07	005	East Branch Ashtabula River	1.50	23.1	1995	1202.0	44	6	0.0	0.0	9.0	MG	Qualitative Data Only					30.0
11	101	Hall Run	0.50	5.5	1998	393.0	23	1	0.0	0.0	8.0	MG	Qualitative Data Only					30.0
02	133	Crosses Run	2.10	1.5	1995	0.0	12	0	0.0	0.0	1.0	0.0	37.7	51.5	51.5	5.0	1529.0	30.0
17	267	Otter Fork Licking River	12.70	7.7	2000	1238.8	46	3.5	0.0	0.0	8.0	MG	Qualitative Data Only					30.0
17	267	Otter Fork Licking River	12.00	8.0	2001	3220.0	38	3	0.0	0.0			No Macroinvertebrate Data					30.0
17	468	Hurford Run	2.00	4.2	1986	40.0	14	0	0.0	0.0	0.0	VP	Qualitative Data Only					30.0
02	546	Upper Twin Creek	1.70	12.7	2006	1230.0	58*	10	0.0	0.0	23.0	E	Qualitative Data Only					30.0
95	910	Kress Creek	0.50	18.6	2012	573.0	23	1	0.0	0.0	2.0	24.4	1.9	5.8	5.83	62.8	309	30.0
95	989	Trib to E. Br. DuPage River #6	0.60	1.0	2011	35.0	23	0	0.0	0.0	4.0	35.3	0.3	0.0	0	54.3	311	30.0
									>10	>10			>5	>35	>30			
									>0.5	>0.5								
						≥36						≥32						
						>41						≥41.8						
						≥46						≥42						

* - Ohio Narrative ratings for qualitative samples: E - Exceptional; G - Good; MG - Marginally Good, F - Fair; P - Poor, VP- Very Poor.

- exceeds toxic response signature threshold.
- exceeds elevated DELT metric threshold.
- meets Ohio Warmwater Use biocriterion.
- meets IL General Use biocriterion.
- Meets Ohio Exceptional Use biocriterion.

below the MPC requested temperatures. Some sites with elevated temperatures had detectable DELTs, but just as many had no DELTs and none with the levels of DELTs observed in Robinson Creek.

Out of the 3487 stream sites selected for these analyses, 65 had maximum temperatures >30°C (86°F); 12 were from Illinois streams and the remainder from Ohio streams (Table 3). Selected fish and macroinvertebrate metrics were examined including Ohio and Illinois fish IBI scores, relative numbers, number of sensitive fish species, the mean and maximum incidence of DELTs, the Ohio macroinvertebrate Invertebrate Community Index (ICI or qualitative narrative equivalent) or the Illinois macroinvertebrate IBI (mIBI), qualitative EPT taxa, % of the sample from the midge genus *Cricotopus*, *%Polypedilum illinoense,* %toxic tolerant taxa, %organic enrichment tolerant taxa, and numbers of macroinvertebrates. In addition to the baseline indices used by Ohio and Illinois, the other metrics are key indicators of assemblage response to different types of pollutional effects. For example, the %DELT, *%Cricotopus, %Polypedilum illinoense,* and %toxic tolerant taxa are indicators of toxic pollution when they exceed certain threshold levels and especially in combination (Yoder and Rankin 1995; Yoder and DeShon 2003) while elevated %organic tolerant taxa can be an indication of organic pollution such as that derived from raw or partially treated sewage. These were included to better assess and highlight the response of the biological assemblages to non-thermal impacts. Six sites in Table 2 had higher maximum temperatures than the highest measured temperature in Robinson Creek in 2016 which was 33.5°C (92.3°F). Three of these sites had some %DELTs, the other three had zero DELTs including the two sites with the highest maximum temperatures of 37°C (98.6°F) that are well above the upper avoidance and lethal thresholds of most thermally tolerant fish species. The highest %DELT of 9.4% in Dicks Creek (Middletown, OH) was also accompanied by an array of non-thermal toxic response signatures especially in the macroinvertebrate results. This particular Ohio stream is impacted by a steel making operation which included acutely toxic releases. The two sites with the highest temperatures occurred in Hurford Run downstream of an oil refinery in Canton, OH. Eleven (11) of the 28 highest ranked sites by temperature are impacted by industrial discharges with the remaining sites comprised of a mix of municipal wastewater, agricultural ditches, and urbanized streams. All of these are thermally modified to varied extents, but elevated temperature did not elicit a consistent and elevated level of DELTs and certainly not the levels observed in Robinson Creek, contrary to the assertions of IDNR.

Conclusions

1. The MPC request for alternative thermal effluent limitations under Section 316(a) is for the *existing* thermal effluent and thermal regime in Robinson Creek as it has existed for many years. The predictive Type II demonstration was conducted under that premise – the MPC Petition ***is not driven by process changes that will increase the temperature of the effluent***.

2. In accordance with the Interagency Guidelines (U.S. EPA 1977), the only option available to MPC was a predictive Type II 316(a) demonstration because of the existing impaired status of the aquatic biota in Robinson Creek. A Type II demonstration does not require a showing

of a balanced indigenous population, which under the existing conditions would be an impossibility. This calls into question any of the IDNR assertions that the existing thermal regime is somehow a threat to the existence of a balanced indigenous population.

3. The reconsideration of Bigeye Chub as a candidate RIS does not alter the original conclusions of the MPC 316(a) demonstration nor the summer average and maximum temperatures derived by the FTMS. While insufficient thermal tolerance data was available to include Bigeye Chub as a final RIS, the analysis of the influence of acclimation temperature on thermal tolerance endpoints is sufficient to estimate the status of Bigeye Chub among the RIS that have sufficient thermal data and the principal conclusion that this species is covered by other RIS.

4. The ability of fish to avoid lethal and otherwise harmful temperatures virtually eliminates the concerns expressed by IDNR about injury and death. The assertion that avoidance constitutes a harassment would be significant only in the case of long-term avoidance where substantial areas of habitat are denied to one or more RIS, which is not expected to occur in Robinson Creek downstream from the MPC 001 outfall. The FTMS and the supplemental analyses herein show that Bigeye Chub are already protected by the proposed summer average and maximum temperatures requested by MPC such that avoidance significant enough to constitute a harassment will not occur. This is further buttressed by the fact that Bigeye Chub are making an attempt to become established in Robinson Creek under the current thermal regime as part of a rangewide expansion of the species into parts of its former range in Illinois.

5. This analysis supports the conclusion of the MPC Bioassessment Report that the highly elevated DELTs in Robinson Creek are the result of non-thermal influences. The thermal regime of Robinson Creek does not play a direct or synergistic role in the observed biological assemblage impairments.

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EXHIBIT 2

Review of the March 29, 2018 Illinois DNR Letter

By

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Marty Sneen, Senior Scientist

EA Engineering, Science, and Technology, Inc., PBC

13 August 2018

This letter has been prepared by EA Engineering, Science, and Technology, Inc., PBC (EA) to respond to issues and recommendations made by the Illinois Department of Natural Resources (IDNR) in a letter dated March 29, 2018 from Mr. Keith M. Shank to Mr. Scott Twait of the Illinois Environmental Protection Agency (IEPA) (hereafter IDNR Letter). Midwest Biodiversity Institute (MBI) has already addressed many of the issues raised by IDNR (hereafter MBI Report). Because the MBI Report has done an excellent job addressing many of IDNR's issues, this EA letter concentrates on issues not addressed by MBI and provides additional support for some of the positions taken in MBI's Report.

What is the Thermal Tolerance of Bigeye Chub?

Based on the purported thermal sensitivity of Bigeye Chub (*Hybopsis amblops*), IDNR recommends that bioassays be conducted to better determine certain thermal endpoints for Bigeye Chub. Because of the importance of the Bigeye Chub thermal endpoint, EA contacted the senior author, Dr. William Lutterschmidt (Lutterschmidt and Hutchinson 1997), of the paper that includes a thermal endpoint for Bigeye Chub. Dr. Lutterschmidt is now at Sam Houston State University where he is the Executive Director of their Research Centers. In an email to EA, Dr. Lutterschmidt recommends not using data for the three species for which he only tested one specimen. Bigeye Chub was one of those three species. He notes that because the sample size was one for these species, he could not calculate the standard deviation or standard error. He stated, "in retrospect, I probably should not have included the three species that had only an N of 1 in the paper." He goes on to state that "my recommendation is not to include this species (referencing to Bigeye Chub) because of sample size."

Given that the senior author recommends not including the Bigeye Chub datum point, we believe IDNR should follow his recommendation. If IDNR continues to rely on the Lutterschmidt and Hutchinson (1997) endpoint, then we request that IDNR consider the following points:

- First, the MBI Report correctly points out that Bigeye Chub has a broad geographic range that encompasses much of the mid-South, a distribution not consistent with a thermally sensitive species. Not only does the distribution of this species range well into the South, its greatest abundance occurs in this area. For example, Bigeye Chub is common throughout middle and east Tennessee in a wide variety of stream sizes (Etnier and Starnes 1993). This distributional pattern is what would be expected for a thermally tolerant, warmwater species, not a thermally sensitive coolwater species.

- Second, as noted in the MBI Report, acclimation temperature greatly affects resultant thermal endpoints. Depending on the approach used, MBI found that the thermal endpoints reported by Lutterschmidt and Hutchinson (1997) should be increased by 4.2-5.0°C (7.6-9°F) to account for the fact that the endpoints were derived using a fish acclimated to 10°C (50°F). Lutterschmidt and Hutchinson (1997) used a Critical Thermal Maximum (CTM) test. When CTM temperatures are plotted against acclimation temperatures, the slope of that line represents the relationship between these two factors. This relationship is linear for most species (Beitinger et al. 2000). The slope represents how much the upper thermal maximum changes for each degree change in acclimation temperature. Beitinger et al. (2000) reported that the average slope for 20 species ranged

from 0.27 to 0.50 with a mean of 0.41. In other words, the upper lethal limit changes by 4°C (7.2°F) for each 10°C (18°F) change in acclimation temperature. Therefore, a 15°C (27°F) increase in acclimation temperature from 10°C (50°F) to 25°C (77°F) would result, on average, in an increase of about 6°C (10.8°F) on the resultant endpoints. This amount is consistent with the adjustment derived in the MBI Report.

- Third, Recommendation #1 in the IDNR Letter to conduct bioassays of the Bigeye Chub is unreasonable. According to the IDNR Letter, these tests should "establish the temperatures which stimulate avoidance behavior (harassment), loss of righting response (harm), onset of spasms (injury), and death." IDNR Letter, at 4. This would require three separate bioassays: one to determine the avoidance temperature, one to measure the two physiological endpoints, and a third to determine the temperature causing death. As discussed in detail below, in addition to the technical challenges and cost associated with conducting three kinds of on-site bioassays, the number of organisms required for these tests is unacceptable for an endangered species. To determine the temperature that causes death, the incipient lethal temperature (ILT) methodology would need to be used (Fry 1947).

  In the ILT methodology, a temperature lethal to 50 percent of a fish sample is determined by plunging groups of fish from a specific acclimation temperature into a series of constant test temperatures near the estimated upper (or lower) temperature limits of a species (Fry 1947). In ILT tests, mortality is the endpoint and is recorded over time. An estimate of the temperature tolerated by 50 percent of a sample for various exposure time intervals, usually 4-7 days, is made from a regression of percentage mortality on test temperature. This method requires a considerable number of test organisms (typically at least 30-50).

  The critical thermal methodology or maximum (CTM) was the methodology used by Lutterschmidt and Hutchinson (1997). In this methodology, individual fish are heated at a constant rate (0.3°C (0.54°F)/min is a commonly recommended rate, Becker and Genoway 1979) until physical disorganization (e.g., loss of equilibrium or onset of muscle spasms) occurs. Lutterschmidt and Hutchinson (1997) used a higher rate (1°C (1.8°F)/min) of increase. The value reported is usually the arithmetic mean of individual tests. This method requires fewer test fish than the ILT methodology, but six fish is the minimum number recommended, with more being better (EPRI 2011).

  Avoidance testing such as that conducted by Cherry et al. (1975) and referenced in the MBI Report (Table 2 in that report) would require at least 10 specimens.

  Collectively, 50 or more Bigeye Chub would be needed to run the three types of tests. Given that a certain amount of mortality occurs as a result of collection and more mortality typically occurs during holding to allow acclimation, the number needed could approach 100. First, it doesn't seem appropriate to sacrifice 100 individuals of any endangered species for the purpose of collecting endpoint data. Second, even if permission was granted, we know of no location in the area specified by IDNR where this number of specimens could be collected. MBI collected only eight individuals from

Robinson Creek and a nearby stream despite a considerable amount of effort. Previously, EA has sampled the Wabash River (one of the areas suggested by the IDNR; see page 2 of the IDNR Letter) and, despite intensive sampling over a three-year period, collected only four Bigeye Chub (EPRI 2015). Lastly, there is no guarantee that a stream fish like Bigeye Chub could even be held successfully.

- Fourth, conducting the endpoint tests recommended by IDNR would be prohibitively expensive. First, it would take a multi-person crew an unknown period of time to collect the needed specimens. Then, the organisms would have to be held for a week or so to allow them to acclimate to the appropriate test temperature (probably 25°C (77°F)). All testing would have to be done on site, which would require at least one, but probably two trailers to be outfitted with a flow-through bioassay system. The testing itself would probably take about a week. There might be circumstances when an effort of this magnitude could be justified, but certainly not in this case where the species in question clearly falls within the sensitivity range of many warmwater fishes.

In summary, even if the Lutterschmidt and Hutchinson (1997) CTM value is included, it is clear that their endpoint value must be increased by 4-6°C because of the low acclimation temperature at which they tested Bigeye Chub. Similarly, the geographic distribution of Bigeye Chub clearly shows that it is a non-thermally sensitive species and therefore concern regarding adverse effects from the Marathon thermal discharge is unnecessary.

Are Bioassays to Assess Deformities, Eroded Fins, Lesions, and Tumors (DELTs) Appropriate?

In Recommendation #2 in the IDNR Letter, IDNR recommends "the need for a bioassay of representative fish species is warranted to identify the character and likely causes of observed DELTs and to determine whether granting the Alternative Thermal Effluent Limits is likely to increase the incidence and/or severity of DELTs on fish in the receiving waters." IDNR Letter, at 4. The MBI Report has addressed the latter issue. We would like to point out, however, that Marathon is not requesting to increase the temperature of its effluent. Thus, the concern by IDNR regarding an increased incidence of DELTs because of higher temperatures is not warranted.

With regard to IDNR's recommendation for bioassays "to identify the character and likely causes of observed DELTs", it should be noted that no such bioassay methodologies exist to address this issue. DELTs are the result of chronic exposure to a pollutant or mixture of pollutants. Recommending what is clearly a research effort is inappropriate.

Where Should Compliance be Measured?

In Recommendation #3, IDNR recommends that "compliance with the Alternative Thermal Effluent Limits should be measured at Outfall 001, or as near as feasible, rather than the proposed point 1.7 miles farther downstream." IDNR Letter, at 4. It is our understanding, however, that Marathon's current NPDES permit establishes the point 1.7 miles downstream of Outfall 001 as the point at which compliance is to be measured. This means that the 1.7-mile

segment between Outfall 001 and the point 1.7 miles downstream of it represents a mixing zone (MZ). Based on the commonly accepted definition of a MZ, criteria (e.g., thermal limits) do not apply within MZs. Similarly, establishment of a balanced, indigenous community (BIC) is not required within a MZ. The only requirement is that a MZ be free of acutely toxic conditions and, to our knowledge, such conditions have never been observed in this 1.7-mile segment.

What Constitutes Harassment?

Lastly, EA disagrees with IDNR's interpretation that thermal avoidance constitutes harassment. As pointed out in the MBI Report, any avoidance by Bigeye Chub of the thermal discharge would be short rather than long-term. EA agrees with MBI that short-term avoidance is of no biological consequence. If avoidance was of such a magnitude that fish, including Bigeye Chub, were precluded from favored feeding, nursery or spawning areas for significant periods (i.e., weeks or months), then EA would agree that, under those circumstances, avoidance could represent harassment. However, short-term (i.e., hours or days) avoidance would not constitute harassment. There has been no evidence provided by IDNR to conclude that what occurs in Robinson Creek constitutes harassment. Harassment implies that there are negative consequences resulting from the action being considered. Again, the IDNR has not established any negative consequences associated with short-term avoidance of the discharge area.

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
1021 North Grand Avenue East, P.O. Box 19276, Springfield, Illinois 62794-9276 • (217) 782-2829
James R. Thompson Center, 100 West Randolph, Suite 11-300, Chicago, IL 60601 • (312) 814-6026

PAT QUINN, GOVERNOR DOUGLAS P. SCOTT, DIRECTOR

217/782-0610

RECEIVED 10/1/2009
ENVIRONMENTAL PROTECTION
MARATHON PETROLEUM COMPANY LLC
ILLINOIS REFINING DIVISION
ROBINSON, ILLINOIS

September 30, 2009

Marathon Petroleum Company, LLC
P.O. Box 1200
Robinson, Illinois 62454

Re: Marathon Petroleum Company, LLC
Marathon Petroleum Company, LLC - Robinson Refinery
NPDES Permit No. IL0004073
Final Permit

Gentlemen:

Attached is the final NPDES Permit for your discharge. The Permit as issued covers discharge limitations, monitoring, and reporting requirements. Failure to meet any portion of the Permit could result in civil and/or criminal penalties. The Illinois Environmental Protection Agency is ready and willing to assist you in interpreting any of the conditions of the Permit as they relate specifically to your discharge. The following changes have been made since the public notice of this permit:

Special Condition 15 prohibits the discharge of untreated FCCU scrubber brine. Special Condition 14 required acute testing has been deleted. A compliance schedule and maximum daily limit for fluoride of 1.4 mg/L has been added. The sulfate limit has been changed to 1,402 mg/L and the total dissolved solids limit has been removed pursuant to 35 Ill. Adm. Code 302.208(h). Limits and a compliance schedule for dissolved oxygen have been added. Load limits have been recalculated at outfall 001 based on an average and peak flows of 2.666 MGD and 3.434 MGD, respectively. Concentration and load limits for ammonia have been recalculated based on the most recent data available. Testing for ceriodaphnia has been added to the biomonitoring requirements in Special Condition 13.

The Agency has begun a program allowing the submittal of electronic Discharge Monitoring Reports (eDMRs) instead of paper Discharge Monitoring Reports (DMRs). If you are interested in eDMRs, more information can be found on the Agency website, http://epa.state.il.us/water/edmr/index.html. If your facility is not registered in the eDMR program, a supply of preprinted paper DMR Forms for your facility will be sent to you prior to the initiation of DMR reporting under the reissued permit. Additional information and instructions will accompany the preprinted DMRs upon their arrival.

The Permit as issued is effective as of the date indicated on the first page of the Permit. You have the right to appeal any condition of the Permit to the Illinois Pollution Control Board within a 35 day period following the issuance date.

Should you have questions concerning the Permit, please contact Mark E. Liska at the telephone number indicated above.

Sincerely,

Alan Keller

Alan Keller, P.E.
Manager, Permit Section
Division of Water Pollution Control

SAK:MEL:04122901.daa

Attachment: Final Permit

cc: Records
Compliance Assurance Section
Champaign Region
USEPA

NPDES Permit No. IL0004073

Illinois Environmental Protection Agency

Division of Water Pollution Control

1021 North Grand Avenue East

Post Office Box 19276

Springfield, Illinois 62794-9276

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

Reissued (NPDES) Permit

Expiration Date: September 30, 2014

Issue Date: September 30, 2009
Effective Date: October 1, 2009

Name and Address of Permittee:

Marathon Petroleum Company LLC
P.O. Box 1200
Robinson, Illinois 62454

Facility Name and Address:

Marathon Petroleum Company LLC - Robinson Refinery
100 Marathon Avenue
Robinson, Illinois 62454
(Crawford County)

Discharge Number and Name:		Receiving Waters:
001 -	Wastewater Treatment Plant Discharge	Robinson Creek
002 -	Treatment Plant Bypass	Marathon Creek
003 -	East Impoundment Basin Discharge	Marathon Creek
005 -	Coke Rail Car Repair Area Stormwater Runoff	Marathon Creek
006 -	York Pond/North Culvert Outflow Stormwater	Robinson Creek
007 -	Southeast Culvert/North Ditch Run-In Stormwater	Unnamed Creek tributary to Robinson Creek
008 -	Southern Fence Line Stormwater Runoff	Drainage Tile tributary to Marathon Creek
009 -	Southwest Gate Drainage Culvert/South Culvert Stormwater	Unnamed Ditch tributary to Robinson Creek
010 -	Northwest Fence Pipe Outflow Stormwater	Unnamed Ditch tributary to Robinson Creek

In compliance with the provisions of the Illinois Environmental Protection Act, Title 35 of Ill. Adm. Code, Subtitle C and/or Subtitle D, Chapter 1, and the Clean Water Act (CWA), the above-named permittee is hereby authorized to discharge at the above location to the above-named receiving stream in accordance with the standard conditions and attachments herein.

Permittee is not authorized to discharge after the above expiration date. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit the proper application as required by the Illinois Environmental Protection Agency (IEPA) not later than 180 days prior to the expiration date.

Alan Keller

Alan Keller, P.E.
Manager, Permit Section
Division of Water Pollution Control

SAK:MEL:04122901.daa

NPDES Permit No. IL0004073

Effluent Limitations and Monitoring

1. From the effective date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

Outfall(s): 001: Wastewater Treatment Plant Discharge and FCCU Scrubber Wastewater - (DAF = 2.666 MGD)

Outfall 001 consists of Treated Process Wastewater, which includes Coke Railcar Water, Fire Hydrant Flushings, Fire Training Water, Fire Water from Emergency Response Operations, Reverse Osmosis Rejection Water, Boiler and Cooling Tower Blowdown, Treated Sanitary Wastewater, Process Wastewater and Hydrostatic Test Water from Terminals and Pipelines, Stormwater Runoff, Hydrostatic Test Water, Treated Groundwater, and Filter Backwash Water, all treated in the Waste Water Treatment Plant. Discharge is to Robinson Creek. Average proposed discharge is 2.666 MGD; Peak Average Flow is 3.434 MGD.

	LOAD LIMITS lbs/day*** DAF (DMF)		CONCENTRATION LIMITS mg/l			
PARAMETER	30 DAY AVERAGE	DAILY MAXIMUM	30 DAY AVERAGE	DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE
Flow (MGD)	See Special Condition 1				Continuous	Meter
pH	See Special Condition 2				2/Week	Grab
Temperature	See Special Condition 8				2/Week	Grab
BOD_5	222	573	10	20	2/Week	Composite
Total Suspended Solids	267	687	12	24	2/Week	Composite
Chemical Oxygen Demand	9,767	18,821			2/Week	Composite
Oil & Grease	333	763	15	30	1/Week	Mathematical Composite**
Phenol (4AAP)		2.9		0.1	2/Week	Composite
Ammonia as N*						
Spring/Fall	33	163	1.5	5.7	2/Week	Composite
Summer	33	198	1.5	6.9	2/Week	Composite
Winter	89	135	4.0	4.7	2/Week	Composite
Sulfide	7.4	16.5			2/Week	Composite
Total Chromium*****	9.8	28	1.0	2.0	2/Year	Composite
Hexavalent Chromium*****	0.24	0.46	0.011	0.016	2/Year	Composite
Chloride		28,643		1000	2/Week	Composite
		Monthly Average Minimum	Weekly Average Minimum	Daily Minimum		
Dissolved Oxygen********						
March - July		NA	6	5	2/Week	Grab
August - February		5.5	4	3.5	2/Week	Grab

NPDES Permit No. IL0004073

Effluent Limitations and Monitoring

1. From the effective date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

Outfall 001: Wastewater Treatment Plant Discharge (continued)

	LOAD LIMITS lbs/day*** DAF (DMF)		CONCENTRATION LIMITS mg/l			
PARAMETER	30 DAY AVERAGE	DAILY MAXIMUM	30 DAY AVERAGE	DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE
Sulfate		46,797****		1,634****	2/Week****	Composite
Mercury				Monitor*****	1/Year	Composite
Fluoride******		40		1.4	2/month	Composite
Zinc (total)*******	1.2	8.7	0.055	0.305	2/Year*****	Composite

*For Ammonia as Nitrogen, Spring/Fall is March-May and September-October; Summer is June-August; Winter is November-February. Discharge from Outfall 001 will also be subject to weekly average Ammonia as Nitrogen limits. The Spring/Fall and Summer weekly average limit is 3.8 mg/L (85 lb/day). No weekly average limit applies in Winter months.
**See Special Condition 7.
***See Special Condition 19.
**** See also Special Condition 14.
*****Mercury will be sampled once per year. In the event that only one sample is collected during the calendar year, the Permittee shall report this value as a daily maximum on the January DMR form. Should the Permittee sample more frequently, the Permittee shall report the average value of all results as a monthly average value and the maximum of all results as a daily maximum on the January DMR form.
Total Chromium, Hexavalent Chromium, and Zinc shall be sampled twice per year. In the event that only one sample is collected in the six-month period, the permittee shall report the semiannual value as the daily maximum on the January or July DMR form and this value will be subject only to the daily maximum limit. Should the permittee sample more frequently, the permittee shall report the average value of all results of all the results obtained during the six-month period as the monthly average value subject to the monthly average limit and the maximum of all results as a daily maximum subject to the daily maximum limit on the January or July DMR form. If the Hexavalent Chromium concentration(s) is below the detection limit (< 0.01 mg/L), then the load limit shall be calculated using one-half the detection limit as the concentration.
****** Fluoride sampling shall occur after a six month compliance period. See Special Condition 23.
******* The zinc limits will take effect 12 months after the effective date of this permit. See Special Condition 22 for compliance schedule.
******** See Special Condition 24.

NPDES Permit No. IL0004073

Effluent Limitations and Monitoring

1. From the effective date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

Outfall(s): 002: Treatment Plant Bypass - (Intermittent Discharge)
Outfall 002 consists of Process Area Stormwater, Cooling Tower and Boiler Blowdown, Stormwater Impoundments, and Overflow from Wastewater Treatment Plant (Including Process Wastewater). Discharge is to Marathon Creek. See Special Condition 9 regarding Bypass.

	LOAD LIMITS lbs/day**** DAF (DMF)		CONCENTRATION LIMITS mg/l			
PARAMETER	30 DAY AVERAGE	DAILY MAXIMUM	30 DAY AVERAGE	DAILY MAXIMUM	SAMPLE FREQUENCY*	SAMPLE TYPE
Flow (MGD)	See Special Condition 1				1/Day	Estimate
pH	See Special Condition 2				1/Day	Grab
BOD_5			10	20	1/Day	Grab
Total Suspended Solids			12	24	1/Day	Grab
Oil & Grease			15	30	1/Day	Grab
Ammonia as N**						
Spring/Fall			1.4	5.7	1/Day	Grab
Summer			1.4	6.9	1/Day	Grab
Winter			4.0	4.7	1/Day	Grab
Phenols				0.1	1/Day	Grab
Total Chromium			1.0	2.0	1/Day	Grab
Hexavalent Chromium			0.011	0.016	1/Day	Grab
Chemical Oxygen Demand			Monitor		1/Day	Grab
Chloride				500	1/Day	Grab
Total BETX***			Monitor		1/Day	Grab
Total PNAs***			Monitor		1/Day	Grab

Note: Ammonia, Biochemical Oxygen Demand, Oil and Grease, Total Chromium, Hexavalent Chromium, and Total Suspended Solids shall be sampled once per day during discharge. In the event that only one sample is collected during the month, the Permittee shall report the values as daily maximums on the DMR form and these values will be subject only to the daily maximum limits. Should the Permittee sample more frequently or discharge occurs for more than 24-hours during a month, the Permittee shall report the average value of all results obtained during the month as a monthly average value subject to the monthly average limit and the maximum of all results as a daily maximum subject to the daily maximum limit.
*One sample per day when discharging.
**For Ammonia as Nitrogen, Spring/Fall is March-May and September-October; Summer is June-August; and Winter is November-February. Should discharge occur on two or more days in a seven-day period, weekly average limits for Ammonia as Nitrogen shall apply. The Spring/Fall and Summer weekly average limit is 3.5 mg/L. No weekly average limit applies for Winter.
***For BETX and PNAs, the Permittee shall sample daily when discharging. The Permittee shall report a daily maximum for each month in which discharge occurs. For any month which two or more discharges occur, the Permittee shall report a monthly average on the DMR form. See Special Condition 12.
****See Special Condition 19.

NPDES Permit No. IL0004073

Effluent Limitations and Monitoring

1. From the effective date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

Outfall(s): 003: East Impoundment Basin Discharge***** - (DAF = 2.631 MGD)

Outfall 003 consists of Hydrostatic Test Water, Coke Railcar Wash Water, Non-Process Area Stormwater, East and West Tank Farm Controlled Stormwater Drainage, Stormwater from Wabash Pond, Non-Emergency Use Firewater, Fire Hydrant Flushings, Fire Water from Emergency Use, Utility Water, and Frog Pond stormwater due to extreme rainfall. Discharge is to Marathon Creek.

	LOAD LIMITS lbs/day DAF (DMF)		CONCENTRATION LIMITS mg/l			
PARAMETER	30 DAY AVERAGE	DAILY MAXIMUM	30 DAY AVERAGE	DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE
Flow (MGD)	See Special Condition 1				1/Day	Estimate
pH	See Special Condition 2				1/Day	Grab
Oil & Grease			15	30	1/Day	Mathematical Composite*
Phenol				0.1	1/Day	Composite
Total Chromium			1.0	2.0	1/Day	Composite
Total Organic Carbon****			Monitor		2/Year**	Composite
Ammonia as N***						
Spring/Fall			1.4	5.7	1/Day	Composite
Summer			1.4	6.9	1/Day	Composite
Winter			4.0	4.7	1/Day	Composite
Total Suspended Solids			15	30	2/Year**	Composite
BOD_5			Monitor		2/Year**	Composite
Chemical Oxygen Demand			Monitor		2/Year**	Composite
Sulfide			Monitor		2/Year**	Composite
Chloride				500	2/Year**	Composite
Fluoride				30	2/Year**	Composite
Sulfate				1,634	2/Year**	Composite

*See Special Condition 7.

**Total Organic Carbon, Total Suspended Solids, Biological Oxygen Demand, Chemical Oxygen Demand, Sulfide, Chloride, Fluoride, and Sulfate shall be sampled twice per year. In the event that only one sample is collected in the six-month period, the Permittee shall report the semiannual value as a daily maximum on the January or July DMR form and this value will be subject only to the daily maximum limit. Should the Permittee sample more frequently, the Permittee shall report the average value of all results obtained during the six-month period as a monthly average value subject to the monthly average limit and the maximum of all results as a daily maximum subject to the daily maximum limit on the January or July DMR form.

***For Ammonia as Nitrogen, Spring/Fall is March-May and September-October; Summer is June-August; and Winter is November-February. Ammonia as Nitrogen is subject to weekly average limits. Spring/Fall and Summer weekly average limit is 3.5 mg/L. For Winter no weekly average limit applies. In the event that only one sample is collected during a month, the Permittee shall report the value as a daily maximum and this value will be subject only to the daily maximum limit. Should the Permittee sample more frequently, the Permittee shall report the average value of all results obtained during the month as a monthly average value subject to the monthly average limit and the maximum of all results as a daily maximum subject to the daily maximum limit.

****See Special Condition 20.

*****See Special Condition 15.

NPDES Permit No. IL0004073
Special Conditions

SPECIAL CONDITION 1. Flow shall be reported in MGD as a daily maximum and a monthly average, and shall be reported on the monthly DMR form.

SPECIAL CONDITION 2. For outfalls 001, and 002, the pH shall be in the range 6.0 to 9.0. The monthly minimum and monthly maximum values shall be reported on the DMR form. For outfall 003, the minimum pH shall be 6.0, but the pH 9.0 maximum limitation may be exceeded if the elevated pH level is caused entirely by algae in treatment lagoons, in which case there is no upper pH limit. This shall be indicated by the permittee in the comment section of the DMR form.

SPECIAL CONDITION 3. Samples taken in compliance with the effluent monitoring requirements shall be taken at a point representative of the discharge, but prior to entry into the receiving stream.

SPECIAL CONDITION 4. If an applicable effluent standard or limitation is promulgated under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Clean Water Act and that effluent standard or limitation is more stringent than any effluent limitation in the permit or controls a pollutant not limited in the NPDES Permit, the Agency shall revise or modify the permit in accordance with the more stringent standard or prohibition and shall so notify the permittee.

SPECIAL CONDITION 5. The use or operation of this facility shall be by or under the supervision of a Certified Class K operator.

SPECIAL CONDITION 6. The Permittee shall record monitoring results on Discharge Monitoring Report (DMR) Forms using one such form for each outfall each month.

In the event that an outfall does not discharge during a monthly reporting period, the DMR Form shall be submitted with no discharge indicated.

The Permittee may choose to submit electronic DMRs (eDMRs) instead of mailing paper DMRs to the IEPA. More information, including registration information for the eDMR program, can be obtained on the IEPA website, http://www.epa.state.il.us/water/edmr/index.html.

The completed Discharge Monitoring Report forms shall be submitted to IEPA no later than the 20th day of the following month, unless otherwise specified by the permitting authority.

Permittees not using eDMRs shall mail Discharge Monitoring Reports with an original signature to the IEPA at the following address:

Illinois Environmental Protection Agency
Division of Water Pollution Control
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276
Attention: Compliance Assurance Section, Mail Code # 19

SPECIAL CONDITION 7. Mathematical composites for oil, fats and greases shall consist of a series of grab samples collected over any 24-hour consecutive period. Each sample shall be analyzed separately and the arithmetic mean of all grab samples collected during a 24-hour period shall constitute a mathematical composite. No single grab sample shall exceed a concentration of 75 mg/l.

SPECIAL CONDITION 8. For outfall 001, discharge of wastewater from this facility must not alone or in combination with other sources cause the receiving stream to violate the following thermal limitations at the edge of the mixing zone which is defined by Section 302.211, Illinois Administration Code, Title 35, Chapter 1, Subtitle C, as amended:

A. Maximum temperature rise above natural temperature must not exceed 5 F (2.8 C).

B. Water temperature at representative locations in the main river shall not exceed the maximum limits in the following table during more than one (1) percent of the hours in the 12-month period ending with any month. Moreover, at no time shall the water temperature at such locations exceed the maximum limits in the following table by more than 3 F (1.7 C). (Main river temperatures are temperatures of those portions of the river essentially similar to and following the same thermal regime as the temperatures of the main flow of the river.)

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
F	60	60	60	90	90	90	90	90	90	90	90	60
C	16	16	16	32	32	32	32	32	32	32	32	16

C. The monthly maximum value shall be reported on the DMR form.

D. Temperature monitoring may be performed manually using a certified portable temperature monitoring device. The Outfall 001 temperature will be monitored on-site at the sampling weir located south of the Sand Filter Building or other representative monitoring location in the event the sampling weir is out of service. In the event the Outfall 001 temperature exceeds the limits in the table, upstream and downstream temperature readings will be monitored at designated locations. The upstream temperatures will be monitored at the bridge north of Carter Lumber, or downstream of the City of Robinson Waste Water Treatment Plant, or other location that is representative of Robinson Creek prior to mixing with Outfall 001. The downstream temperatures will be monitored at the bridge at the Hog Farm east of Route 1, or the Route 1 Highway bridge, or other location that is representative of Robinson Creek and Outfall 001.

SPECIAL CONDITION 9. Discharge Number 002 is an emergency high level bypass. Discharges from this overflow are subject to the following conditions:

(1) Definitions

(i) "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

(ii) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

(2) Bypass not exceeding limitations. The Permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it is for essential maintenance to assure efficient operation. Bypass of WWTP sand filters due to excess hydraulic loading to the sand filters is an acceptable bypass, provided the effluent does not cause effluent limitations to be exceeded. Bypass of WWTP Tank 79D-63 in order to impound off-spec wastewater so as to prevent a negative impact to the activated sludge treatment is an acceptable bypass, provided the effluent does not cause effluent limitations to be exceeded. These bypasses are not subject to the provisions of paragraphs (3) and (4) of this section.

(3) Notice

(i) Anticipated bypass. If the Permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.

(ii) Unanticipated bypass. The Permittee shall submit notice of an unanticipated bypass as required in Standard Condition 12(e) of this Permit (24-hour notice). In the event that notice shall be given outside of business hours, the permittee shall contact the Illinois Emergency Management Agency at 800-782-7860.

(4) Prohibition of bypass. Bypass is prohibited, and the IEPA may take enforcement action against a Permittee for bypass, unless:

(i) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(ii) There was no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(iii) The Permittee submitted notices as required under Standard Condition 12(e) of this Permit.

(5) Emergency Bypass when discharging, shall be monitored daily for parameters listed on Page 3 for outfall 002. The Permittee shall submit the monitoring results on Discharge Monitoring Report forms using one such form for each month in which bypassing occurs. The Permittee shall specify the number of discharges per month and the duration in days of each discharge that occur in the comments section of the DMR form. The Permittee shall report the average and maximum concentration values for the parameters listed on Page 3 for outfall 002 on the DMR form.

SPECIAL CONDITION 10.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

A. A storm water pollution prevention plan shall be developed by the permittee for the storm water associated with industrial activity at this facility. The plan shall identify potential sources of pollution which may be expected to affect the quality of storm water discharges associated with the industrial activity at the facility. In addition, the plan shall describe and ensure the implementation of practices which are to be used to reduce the pollutants in storm water discharges associated with industrial activity at the facility and to assure compliance with the terms and conditions of this permit.

B. The plan shall be completed within 180 days of the effective date of this permit. Plans shall provide for compliance with the terms of the plan within 180 days of the effective date of this permit. The owner or operator of the facility shall make a copy of the plan available to the Agency at any reasonable time upon request. [Note: If the plan has already been developed and implemented it shall be maintained in accordance with all requirements of this special condition.]

C. The permittee may be notified by the Agency at any time that the plan does not meet the requirements of this condition. After such notification, the permittee shall make changes to the plan and shall submit a written certification that the requested changes have been made. Unless otherwise provided, the permittee shall have 30 days after such notification to make the changes.

D. The discharger shall amend the plan whenever there is a change in construction, operation, or maintenance which may affect the discharge of significant quantities of pollutants to the waters of the State or if a facility inspection required by paragraph G of this condition indicates that an amendment is needed. The plan should also be amended if the discharger is in violation of any conditions of this permit, or has not achieved the general objective of controlling pollutants in storm water discharges. Amendments to the plan shall be made within the shortest reasonable period of time, and shall be provided to the Agency for review upon request.

E. The plan shall provide a description of potential sources which may be expected to add significant quantities of pollutants to storm water discharges, or which may result in non-storm water discharges from storm water outfalls at the facility. The plan shall include, at a minimum, the following items:

1. A topographic map extending one-quarter mile beyond the property boundaries of the facility, showing: the facility, surface water bodies, wells (including injection wells), seepage pits, infiltration ponds, and the discharge points where the facility's storm water discharges to a municipal storm drain system or other water body. The requirements of this paragraph may be included on the site map if appropriate.

2. A site map showing:

   i. The storm water conveyance and discharge structures;

   ii. An outline of the storm water drainage areas for each storm water discharge point;

   iii. Paved areas and buildings;

   iv. Areas used for outdoor manufacturing, storage, or disposal of significant materials, including activities that generate significant quantities of dust or particulates.

   v. Location of existing storm water structural control measures (dikes, coverings, detention facilities, etc.);

   vi. Surface water locations and/or municipal storm drain locations

   vii. Areas of existing and potential soil erosion;

   viii. Vehicle service areas;

   ix. Material loading, unloading, and access areas.

3. A narrative description of the following:

   i. The nature of the industrial activities conducted at the site, including a description of significant materials that are treated, stored or disposed of in a manner to allow exposure to storm water;

ii. Materials, equipment, and vehicle management practices employed to minimize contact of significant materials with storm water discharges;

iii. Existing structural and non-structural control measures to reduce pollutants in storm water discharges;

iv. Industrial storm water discharge treatment facilities;

v. Methods of onsite storage and disposal of significant materials;

4. A list of the types of pollutants that have a reasonable potential to be present in storm water discharges in significant quantities.

5. An estimate of the size of the facility in acres or square feet, and the percent of the facility that has impervious areas such as pavement or buildings.

6. A summary of existing sampling data describing pollutants in storm water discharges.

F. The plan shall describe the storm water management controls which will be implemented by the facility. The appropriate controls shall reflect identified existing and potential sources of pollutants at the facility. The description of the storm water management controls shall include:

1. Storm Water Pollution Prevention Personnel - Identification by job titles of the individuals who are responsible for developing, implementing, and revising the plan.

2. Preventive Maintenance - Procedures for inspection and maintenance of storm water conveyance system devices such as oil/water separators, catch basins, etc., and inspection and testing of plant equipment and systems that could fail and result in discharges of pollutants to storm water.

3. Good Housekeeping - Good housekeeping requires the maintenance of clean, orderly facility areas that discharge storm water. Material handling areas shall be inspected and cleaned to reduce the potential for pollutants to enter the storm water conveyance system.

4. Spill Prevention and Response - Identification of areas where significant materials can spill into or otherwise enter the storm water conveyance systems and their accompanying drainage points. Specific material handling procedures, storage requirements, spill clean up equipment and procedures should be identified, as appropriate. Internal notification procedures for spills of significant materials should be established.

5. Storm Water Management Practices - Storm water management practices are practices other than those which control the source of pollutants. They include measures such as installing oil and grit separators, diverting storm water into retention basins, etc. Based on assessment of the potential of various sources to contribute pollutants, measures to remove pollutants from storm water discharge shall be implemented. In developing the plan, the following management practices shall be considered:

i. Containment - Storage within berms or other secondary containment devices to prevent leaks and spills from entering storm water runoff;

ii. Oil & Grease Separation - Oil/water separators, booms, skimmers or other methods to minimize oil contaminated storm water discharges;

iii. Debris & Sediment Control - Screens, booms, sediment ponds or other methods to reduce debris and sediment in storm water discharges;

iv. Waste Chemical Disposal - Waste chemicals such as antifreeze, degreasers and used oils shall be recycled or disposed of in an approved manner and in a way which prevents them from entering storm water discharges.

v. Storm Water Diversion - Storm water diversion away from materials manufacturing, storage and other areas of potential storm water contamination;

vi. Covered Storage or Manufacturing Areas - Covered fueling operations, materials manufacturing and storage areas to prevent contact with storm water.

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6. Sediment and Erosion Prevention - The plan shall identify areas which due to topography, activities, or other factors, have a high potential for significant soil erosion and describe measures to limit erosion.

7. Employee Training - Employee training programs shall inform personnel at all levels of responsibility of the components and goals of the storm water pollution control plan. Training should address topics such as spill response, good housekeeping and material management practices. The plan shall identify periodic dates for such training.

8. Inspection Procedures - Qualified plant personnel shall be identified to inspect designated equipment and plant areas. A tracking or follow-up procedure shall be used to ensure appropriate response has been taken in response to an inspection. Inspections and maintenance activities shall be documented and recorded.

G. The permittee shall conduct an annual facility inspection to verify that all elements of the plan, including the site map, potential pollutant sources, and structural and non-structural controls to reduce pollutants in industrial storm water discharges are accurate. Observations that require a response and the appropriate response to the observation shall be retained as part of the plan. Records documenting significant observations made during the site inspection shall be submitted to the Agency in accordance with the reporting requirements of this permit.

H. This plan should briefly describe the appropriate elements of other program requirements, including Spill Prevention Control and Countermeasures (SPCC) plans required under Section 311 of the CWA and the regulations promulgated thereunder, and Best Management Programs under 40 CFR 125.100.

I. The plan is considered a report that shall be available to the public under Section 308(b) of the CWA. The permittee may claim portions of the plan as confidential business information, including any portion describing facility security measures.

J. The plan shall include the signature and title of the person responsible for preparation of the plan and include the date of initial preparation and each amendment thereto.

Construction Authorization

K. Authorization is hereby granted to construct treatment works and related equipment that may be required by the Storm Water Pollution Prevention Plan developed pursuant to this permit.

This Authorization is issued subject to the following condition(s).

1. If any statement or representation is found to be incorrect, this authorization may be revoked and the permittee there upon waives all rights thereunder.

2. The issuance of this authorization (a) does not release the permittee from any liability for damage to persons or property caused by or resulting from the installation, maintenance or operation of the proposed facilities; (b) does not take into consideration the structural stability of any units or part of this project; and (c) does not release the permittee from compliance with other applicable statutes of the State of Illinois, or other applicable local law, regulations or ordinances.

3. Plans and specifications of all treatment equipment being included as part of the stormwater management practice shall be included in the SWPPP.

4. Construction activities which result from treatment equipment installation, including clearing, grading and excavation activities which result in the disturbance of one acre or more of land area, are not covered by this authorization. The permittee shall contact the IEPA regarding the required permit(s).

REPORTING

L. The facility shall submit an annual inspection report to the Illinois Environmental Protection Agency. The report shall include results of the annual facility inspection which is required by Part G of the Storm Water Pollution Prevention Plan of this permit. The report shall also include documentation of any event (spill, treatment unit malfunction, etc.) which would require an inspection, results of the inspection, and any subsequent corrective maintenance activity. The report shall be completed and signed by the authorized facility

employee(s) who conducted the inspection(s).

M. The first report shall contain information gathered during the one year time period beginning with the effective date of coverage under this permit and shall be submitted no later than 60 days after this one year period has expired. Each subsequent report shall contain the previous year's information and shall be submitted no later than one year after the previous year's report was due.

N. Annual inspection reports shall be mailed to the following address:

Illinois Environmental Protection Agency
Bureau of Water
Compliance Assurance Section
Annual Inspection Report
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

O. If the facility performs inspections more frequently than required by this permit, the results shall be included as additional information in the annual report.

SPECIAL CONDITION 11. For outfalls 001, 002, and 003, the Agency has determined that the effluent limitations in this permit constitute BAT/BCT for storm water for purposes of this permit reissuance, and no pollution prevention plan will be required for such storm water. In addition to the chemical specific monitoring required elsewhere in this permit, the permittee shall conduct an annual inspection of the facility site to identify areas contributing to a storm water discharge associated with industrial activity, and determine whether any facility modifications have occurred which result in previously-treated storm water discharges no longer receiving treatment. If any such discharges are identified the permittee shall request a modification of this permit within 30 days after the inspection. Records of the annual inspection shall be retained by the permittee for the term of this permit and be made available to the Agency on request.

SPECIAL CONDITION 12. For the purposes of this permit, Total PNAs is defined as the arithmetic sum of the following polynuclear aromatic compounds: Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, Dibenzo(a,h)anthracene, Indeno(1,2,3-c,d)pyrene, Chrysene, Fluoranthene, Fluorene, Naphthalene, Phenanthrene, and Pyrene. Total BETX shall be defined as the arithmetic sum of Benzene, Toluene, Ethylbenzene, and Total Xylenes. For the purpose of showing compliance, concentrations found to be below detection shall be considered zero in calculations and will be reported as zero on the DMR form if all concentrations are below the detection limits.

SPECIAL CONDITION 13. The permittee shall prepare a biomonitoring plan for the testing of outfall 001 as outlined in Special Condition 13 and Special Condition 14. The plan must be submitted to the Compliance Assurance Section within forty-five (45) days of the effective date of this permit.

1. Chronic Toxicity - Standard definitive chronic toxicity tests shall be run on Fathead Minnow. Testing must be consistent with Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, (Fourth Edition - October 2002) EPA/821-R-02-013. Results shall be reported according to Section 10 of this publication. The selection of an appropriate control for the toxicity tests shall be submitted to IEPA for review and approval prior to use. Unless substitute tests are pre-approved; the following tests are required:

   a. Fish - Fathead Minnow (Pimephales promelas) Larval Survival and Growth Test.

   b. Ceriodaphnia Survival and Reproduction Test.

   c. This test shall be conducted on Waste Water Treatment Plant effluent, tributary to outfall 001, prior to entering the receiving stream and prior to mixing with any other wastewater sources.

2. Testing Frequency - The above tests shall be conducted on a monthly basis for six (6) months after Agency approval of the biomonitoring plan. The permittee shall conduct the test semi-annually thereafter. Tests shall be performed using 24-hour composite effluent samples unless otherwise authorized by the IEPA. Results shall be submitted to IEPA within fifteen (15) days of becoming available to the Permittee. The permittee shall submit results to the following address.

Illinois Environmental Protection Agency
Bureau of Water
Compliance Assurance Section, Mail Code 19
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

Illinois Environmental Protection Agency
Bureau of Water
Attn: Bob Mosher, Water Quality Standards
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

3. Toxicity Assessment - Should the review of the results of the biomonitoring program indicate a significant baseline shift in toxicity, the IEPA may require that the Permittee prepare a plan for toxicity reduction evaluation and identification. This plan shall be developed in accordance with Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants, EPA/833B-99/002, and shall include an evaluation to determine which chemicals have a potential for being discharged in the plant wastewater, a monitoring program to determine their presence or absence and to identify other compounds which are not being removed by treatment, and other measures as appropriate. The Permittee shall submit to the IEPA its plan for toxicity reduction evaluation within ninety (90) days following notification by the IEPA. The Permittee shall implement the plan within ninety (90) days or other such date as contained in a notification letter received from the IEPA.

   The IEPA may modify this Permit during its term to incorporate additional requirements or limitations based on the results of the biomonitoring. In addition, after review of the monitoring results, the IEPA may modify this Permit to include numerical limitations for specific toxic pollutants. Modifications under this condition shall follow public notice and opportunity for hearing.

SPECIAL CONDITION 14. Untreated FCCU Scrubber Wastewater shall not be discharged to any waters of the state unless a modification to this permit is obtained. Modification under this special condition shall follow public notice and opportunity for hearing.

SPECIAL CONDITION 15. For the purpose of this permit, the discharge at outfall 003 shall be limited at all times to Hydrostatic Test Water, Coke Railcar Wash Water, Non-Process Area Stormwater, East and West Tank Farm Controlled Stormwater Drainage, Stormwater from Wabash Pond, Non-Emergency Use Firewater, Fire Hydrant Flushings, Fire Water From Emergency Use, Utility Water, and Frog Pond stormwater due to extreme rainfall. In the event that the permittee must discharge process wastewater or contaminated stormwater runoff into the East Impoundment Basin for temporary storage, there shall be no discharge from outfall 003, and the permittee shall notify the IEPA, Division of Water Pollution Control, Champaign Field Operations Section within 24 hours (or the next business day). The permittee shall notify the Agency on each such occasion.

SPECIAL CONDITION 16. This permit does not authorize the permittee to operate an on-site sludge disposal facility or the land application of sludge on-site. Sludge handling activities are authorized by RCRA permit issued to the permittee.

SPECIAL CONDITION 17. The permittee shall add 300 pounds of powdered activated carbon (PAC) per day at an appropriate point in the WWTP process to address chronic toxicity and comply with outfall 001 limits. The permittee shall maintain a daily log of the amount of PAC injected into the Waste Water Treatment Plant. The amount of PAC may be reduced based upon review of appropriate data and Agency approval.

SPECIAL CONDITION 18. In addition to the other requirements of this permit no effluent shall contain settleable solids, floating debris, visible oil, grease, scum, or sludge solids. Color, odor, and turbidity shall be reduced to below obvious levels.

SPECIAL CONDITION 19.
Storm Water Credit:

An additional mass allowance may be calculated for Outfalls 001 and 002 Load Limitations, for the following parameters, based on 100% of the storm water flow as defined below.

	Pounds per 1000 gallons of storm water flow	
Parameter	Average	Maximum
COD	1.5	3.0

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Oil and Grease	0.067*	0.13*
Chromium (total)	0.0018	0.005
BOD_5	0.22	0.4
Phenolic Compounds	0.0014	0.0029

Dry Weather Flow - The average flow from the API separator for the last three consecutive zero precipitation days. Previously collected storm water shall not be included.

Storm Water Flows - The storm water runoff which is treated in the waste water treatment facility shall be defined as that portion of the flow greater than the dry weather flow.

The quantity of pollutants discharged shall not exceed the quantity determined by multiplying the flow of storm water as determined by the permittee times the concentrations listed in the above table.

The stormwater credit does not authorize the permittee to exceed the concentration limits contained in the Effluent Limitations and Monitoring for outfalls 001and 002.

In computing monthly average permit limits to include storm water credit, the pound credit calculated above shall be averaged along with the process pound limits over the 30 day period. Explanatory calculations and flow data shall be submitted together with the DMR form. *At no time shall oil and grease exceed 450 lb/day monthly average, 844 lbs/day daily maximum, for Outfall 001.

SPECIAL CONDITION 20. The permittee shall monitor outfall 003 for Total Organic Carbon (TOC) and shall report the daily maximum value and a monthly average if more than one sample is collected in a one-month period. Based upon reported values, the Agency may impose limits on outfall 003 for Total Organic Carbon if necessary.

SPECIAL CONDITION 21. The effluent, alone or in combination with other sources, shall not cause a violation of any applicable water quality standard outlined in 35 Ill. Adm. Code 302.

SPECIAL CONDITION 22. Discharge of total zinc from outfall 001 must not exceed 0.055 mg/l as a monthly average concentration limit and 0.305 mg/l as a daily maximum concentration limit. The permittee shall achieve compliance with these limits as soon as possible, but no later than twelve months following notification of coverage under this permit.

Compliance Schedule

Item	Compliance Date
1. Obtain Permit for GAC treatment option	6 months from the effective date of this permit
2. Determine if a zinc site-specific translator study is required	6 months from the effective date of this permit
3. Define zinc site-specific translator study with IEPA, if required	9 months from the effective date of this permit
4. Complete zinc response plan and any sampling plan changes, if requried	9 months from the effective date of this permit
5. Achieve compliance on or before	12 months from the effective date of this permit
6. Submit results from zinc site-specific date of this permit, if required	12 months from the effective date of this permit

A minimum of twelve weekly samples need to be collected and analyzed for total and dissolved zinc in order to determine a metal translator for zinc, if this study is required by the IEPA. At the conclusion of this study, the IEPA will review the submitted sample data and will use this information to decide whether or not to modify the limits for total zinc.

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SPECIAL CONDITION 23. Discharge of process water from the facility at outfall 001 must not exceed 1.4 mg/l of fluoride as a daily maximum concentration limit. The permittee shall achieve compliance with the 1.4 mg/l fluoride limit as soon as possible, but no later than six months per the compliance schedule below following notification of coverage under this permit.

Compliance Schedule

Item	Compliance Date
1. Complete plans and obtain any permits, if appropriate	3 months from the effective date of this permit
2. Complete generation of a calendar year of compliance data and submit an interim status report	4 months from the effective date of this permit
3. Complete Fluoride response plan and any sampling plan changes and construction, if required	5 months from the effective date of this permit
4. Achieve compliance on or before	6 months from the effective date of this permit

The interim status report required under item 3 of the Compliance Schedule shall be submitted to the Agency at the address listed under Special Condition 6.

SPECIAL CONDITION 24. Discharge of process water from the facility at outfall 001 must comply with the minimum dissolved oxygen limits noted in this permit as soon as possible, but no later than 15 months per the compliance schedule below following notification of coverage under this permit.

Compliance Schedule

Item	Compliance Date
1. Implement appropriate dissolved oxygen method	3 months from the effective date of this permit
2. Conduct dissolved oxygen monitoring and evaluate results	4 months from the effective date of this permit
3. Evaluate results and determine compliance status	5 months from the effective date of this permit
4. Define compliance options, if necessary	7 months from the effective date of this permit
5. Submit an interim status report	8 months from the effective date of this permit
6. Obtain a construction permit, if necessary	9 months from the effective date of this permit
7. Complete construction and implement compliance options, if necessary	13 months from the effective date of this permit
8. Achieve compliance on or before	15 months from the effective date of this permit

The interim status report required under item 5 of the Compliance Schedule shall be submitted to the Agency at the address listed under Special Condition 6.

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Attachment H
Standard Conditions

Definitions

Act means the Illinois Environmental Protection Act, 415 ILCS 5 as Amended.

Agency means the Illinois Environmental Protection Agency.

Board means the Illinois Pollution Control Board.

Clean Water Act (formerly referred to as the Federal Water Pollution Control Act) means Pub. L 92-500, as amended. 33 U.S.C. 1251 et seq.

NPDES (National Pollutant Discharge Elimination System) means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318 and 405 of the Clean Water Act.

USEPA means the United States Environmental Protection Agency.

Daily Discharge means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Maximum Daily Discharge Limitation (daily maximum) means the highest allowable daily discharge.

Average Monthly Discharge Limitation (30 day average) means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Discharge Limitation (7 day average) means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Aliquot means a sample of specified volume used to make up a total composite sample.

Grab Sample means an individual sample of at least 100 milliliters collected at a randomly-selected time over a period not exceeding 15 minutes.

24 Hour Composite Sample means a combination of at least 8 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over a 24-hour period.

8 Hour Composite Sample means a combination of at least 3 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over an 8-hour period.

Flow Proportional Composite Sample means a combination of sample aliquots of at least 100 milliliters collected at periodic intervals such that either the time interval between each aliquot or the volume of each aliquot is proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot.

(1) Duty to comply. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a permit renewal application. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

(2) Duty to reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. If the permittee submits a proper application as required by the Agency no later than 180 days prior to the expiration date, this permit shall continue in full force and effect until the final Agency decision on the application has been made.

(3) Need to halt or reduce activity not a defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

(4) Duty to mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

(5) Proper operation and maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up, or auxiliary facilities, or similar systems only when necessary to achieve compliance with the conditions of the permit.

(6) Duty to provide information. The permittee shall furnish to the Agency, within a reasonable time, any information which the Agency may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with the permit. The permittee shall also furnish to the Agency, upon request, copies of records required to be kept by this permit.

(7) Property rights. This permit does not convey any property rights of any sort, or any exclusive privilege.

(8) Duty to provide information. The permittee shall furnish to the Agency within a reasonable time, any information which the Agency may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with the permit. The permittee shall also furnish to the Agency, upon request, copies of records required to be kept by this permit.

(9) Inspection and entry. The permittee shall allow an authorized representative of the Agency, upon the presentation of credentials and other documents as may be required by law, to:

(a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

(b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

(c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

(d) Sample or monitor at reasonable times, for the purpose of assuring permit compliance, or as otherwise authorized by the Act, any substances or parameters at any location.

(10) Monitoring and records.

(a) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

(b) The permittee shall retain records of all monitoring information, including all calibration and maintenance records, and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of this permit, measurement, report or application. This period may be extended by request of the Agency at any time.

(c) Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;

(2) The individual(s) who performed the sampling or measurements;

(3) The date(s) analyses were performed;

(4) The individual(s) who performed the analyses;

(5) The analytical techniques or methods used; and

(6) The results of such analyses.

(d) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit. Where no test procedure under 40 CFR Part 136 has been approved, the permittee must submit to the Agency a test method for approval. The permittee shall calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals to ensure accuracy of measurements.

(11) Signatory requirement. All applications, reports or information submitted to the Agency shall be signed and certified.

(a) Application. All permit applications shall be signed as follows:

(1) For a corporation: by a principal executive officer of at least the level of vice president or a person or position having overall responsibility for environmental matters for the corporation;

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

(b) Reports. All reports required by permits, or other information requested by the Agency shall be signed by a person described in paragraph (a) or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described in paragraph (a); and

(2) The authorization specifies either an individual or a position responsible for the overall operation of the facility, from which the discharge originates, such as a plant manager, superintendent or person of equivalent responsibility; and

(3) The written authorization is submitted to the Agency.

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(c) Changes of Authorization. If an authorization under (b) is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of (b) must be submitted to the Agency prior to or together with any reports, information, or applications to be signed by an authorized representative.

(12) Reporting requirements.

(a) Planned changes. The permittee shall give notice to the Agency as soon as possible of any planned physical alterations or additions to the permitted facility.

(b) Anticipated noncompliance. The permittee shall give advance notice to the Agency of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

(c) Compliance schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

(d) Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR).

(2) If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR 136 or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.

(3) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Agency in the permit.

(e) Twenty-four hour reporting. The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and time; and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The following shall be included as information which must be reported within 24 hours:

(1) Any unanticipated bypass which exceeds any effluent limitation in the permit;

(2) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Agency in the permit to be reported within 24 hours.

The Agency may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

(f) Other noncompliance. The permittee shall report all instances of noncompliance not reported under paragraphs (12)(c), (d), or (e), at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph (12)(e).

(g) Other information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or in any report to the Agency, it shall promptly submit such facts or information.

(13) Transfer of permits. A permit may be automatically transferred to a new permittee if:

(a) The current permittee notifies the Agency at least 30 days in advance of the proposed transfer date;

(b) The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage and liability between the current and new permittees; and

(c) The Agency does not notify the existing permittee and the proposed new permittee of its intent to modify or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement.

(14) All manufacturing, commercial, mining, and silvicultural dischargers must notify the Agency as soon as they know or have reason to believe:

(a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant identified under Section 307 of the Clean Water Act which is not limited in the permit, if that discharge will exceed the highest of the following notification levels:

(1) One hundred micrograms per liter (100 ug/l);

(2) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony.

(3) Five (5) times the maximum concentration value reported for that pollutant in the NPDES permit application; or

(4) The level established by the Agency in this permit.

(b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the NPDES permit application.

(15) All Publicly Owned Treatment Works (POTWs) must provide adequate notice to the Agency of the following:

(a) Any new introduction of pollutants into that POTW from an indirect discharge which would be subject to Sections 301 or 306 of the Clean Water Act if it were directly discharging those pollutants; and

(b) Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

(c) For purposes of this paragraph, adequate notice shall include information on (i) the quality and quantity of effluent introduced into the POTW, and (ii) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

(16) If the permit is issued to a publicly owned or publicly regulated treatment works, the permittee shall require any industrial user of such treatment works to comply with federal requirements concerning:

(a) User charges pursuant to Section 204(b) of the Clean Water Act, and applicable regulations appearing in 40 CFR 35;

(b) Toxic pollutant effluent standards and pretreatment standards pursuant to Section 307 of the Clean Water Act; and

(c) Inspection, monitoring and entry pursuant to Section 308 of the Clean Water Act.

(17) If an applicable standard or limitation is promulgated under Section 301(b)(2)(C) and (D), 304(b)(2), or 307(a)(2) and that effluent standard or limitation is more stringent than any effluent limitation in the permit, or controls a pollutant not limited in the permit, the permit shall be promptly modified or revoked, and reissued to conform to that effluent standard or limitation.

(18) Any authorization to construct issued to the permittee pursuant to 35 Ill. Adm. Code 309.154 is hereby incorporated by reference as a condition of this permit.

(19) The permittee shall not make any false statement, representation or certification in any application, record, report, plan or other document submitted to the Agency or the USEPA, or required to be maintained under this permit.

(20) The Clean Water Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Clean Water Act is subject to a civil penalty not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing Sections 301, 302, 306, 307, or 308 of the Clean Water Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than one year, or both.

(21) The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

(22) The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit shall, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

(23) Collected screening, slurries, sludges, and other solids shall be disposed of in such a manner as to prevent entry of those wastes (or runoff from the wastes) into waters of the State. The proper authorization for such disposal shall be obtained from the Agency and is incorporated as part hereof by reference.

(24) In case of conflict between these standard conditions and any other condition(s) included in this permit, the other condition(s) shall govern.

(25) The permittee shall comply with, in addition to the requirements of the permit, all applicable provisions of 35 Ill. Adm. Code, Subtitle C, Subtitle D, Subtitle E, and all applicable orders of the Board.

(26) The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit is held invalid, the remaining provisions of this permit shall continue in full force and effect.

(Rev. 3-13-98)

ATTACHMENT C

EcoCAT
Ecological Compliance Assessment Tool

Applicant: IEPA
Contact: Scott Twait
Address: 1021 North Grand Avenue East
Springfield, IL 62794

IDNR Project Number: 1608667
Date: 03/17/2016
Alternate Number: IL0004073

Project: Marathon 316(a)
Address: 400 S. Marathon Avenue, Robinson

Description: Marathon is proposing to do a thermal study that will result in a 316(a) variance.

Natural Resource Review Results

Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location.

Consultation is terminated. This consultation is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Termination does not imply IDNR's authorization or endorsement.

Location
The applicant is responsible for the accuracy of the location submitted for the project.

County: Crawford

Township, Range, Section:
7N, 12W, 35

IL Department of Natural Resources Contact
Pat Malone
217-785-5500
Division of Ecosystems & Environment

Government Jurisdiction
IL Environmental Protection Agency
Scott Twait
2021 N. Grand Ave East
Springfield, Illinois 62794

Disclaimer

The Illinois Natural Heritage Database cannot provide a conclusive statement on the presence, absence, or condition of natural resources in Illinois. This review reflects the information existing in the Database at the time of this inquiry, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, compliance with applicable statutes and regulations is required.

IDNR Project Number: 1608667

Terms of Use

By using this website, you acknowledge that you have read and agree to these terms. These terms may be revised by IDNR as necessary. If you continue to use the EcoCAT application after we post changes to these terms, it will mean that you accept such changes. If at any time you do not accept the Terms of Use, you may not continue to use the website.

1. The IDNR EcoCAT website was developed so that units of local government, state agencies and the public could request information or begin natural resource consultations on-line for the Illinois Endangered Species Protection Act, Illinois Natural Areas Preservation Act, and Illinois Interagency Wetland Policy Act. EcoCAT uses databases, Geographic Information System mapping, and a set of programmed decision rules to determine if proposed actions are in the vicinity of protected natural resources. By indicating your agreement to the Terms of Use for this application, you warrant that you will not use this web site for any other purpose.

2. Unauthorized attempts to upload, download, or change information on this website are strictly prohibited and may be punishable under the Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act.

3. IDNR reserves the right to enhance, modify, alter, or suspend the website at any time without notice, or to terminate or restrict access.

Security

EcoCAT operates on a state of Illinois computer system. We may use software to monitor traffic and to identify unauthorized attempts to upload, download, or change information, to cause harm or otherwise to damage this site. Unauthorized attempts to upload, download, or change information on this server is strictly prohibited by law.

Unauthorized use, tampering with or modification of this system, including supporting hardware or software, may subject the violator to criminal and civil penalties. In the event of unauthorized intrusion, all relevant information regarding possible violation of law may be provided to law enforcement officials.

Privacy

EcoCAT generates a public record subject to disclosure under the Freedom of Information Act. Otherwise, IDNR uses the information submitted to EcoCAT solely for internal tracking purposes.

ATTACHMENT D

nathan.grider@illinois.gov

From: Twait, Scott
Sent: Tuesday, May 10, 2016 4:04 PM
To: Grider, Nathan
Subject: FW: Marathon Petroleum IAC 106.1120 Detailed Plan of Study

Nathan,

I know that I invited you to the meeting (You had something else that you needed to attend). I am not sure that you received the Detailed Plan of Study. Did IDNR have any comments on the attached plan of study? I am hoping to send an approval of the plan of study this week. If I don't hear back from you in that time period, I will leave an opening for IDNR's comments in my approval letter.

Thanks,
Scott

From: Masden, Elizabeth S. (MPC) [mailto:esmasden@marathonpetroleum.com]
Sent: Monday, April 18, 2016 1:06 PM
To: Twait, Scott; Koch, Brian
Cc: Titsworth, Jerri L. (MPC); Smith, Greg (Law) (MPC); Bigham, John G. (MPC); Chris Yoder
Subject: Marathon Petroleum IAC 106.1120 Detailed Plan of Study

Scott and Brian,

Please find attached Marathon Petroleum Company's Detailed Plan of Study, submitted per IAC 106.1120. If you have any questions feel free to contact myself or Jerri Titsworth.

Thank you,

E. Sloane Masden
HES Professional | Illinois Refining Division
Marathon Petroleum Company LP
Phone: 618-544-2121 x 5336
Email: esmasden@marathonpetroleum.com

ATTACHMENT E

ILLINOIS DEPARTMENT OF NATURAL RESOURCES

Illinois Department of Natural Resources

One Natural Resources Way Springfield, Illinois 62702-1271
www.dnr.illinois.gov

Bruce Rauner, Governor
Wayne A. Rosenthal, Director

January 26, 2018

Mr. Scott Twait
Division of Water Pollution Control
Bureau of Water
Illinois Environmental Protection Agency
1020 North Grand Ave. East
Springfield, IL 62794-9276

RE: Marathon Refinery NPDES Thermal Variance Request, Crawford County
Endangered Species Consultation Process
EcoCAT Review #1608667; #1706633

Dear Mr. Twait:

The Department is contacting you pursuant to the requirements of the *Illinois Endangered Species Protection Act* [520 ILCS 10/11], the *Illinois Natural Areas Preservation Act* [525 ILCS 30/17], and Title 17 *Illinois Administrative Code* Part 1075.

The EcoCAT reviews referenced above were initiated on behalf of Marathon Petroleum Company LLC pertaining to a study pursuant to Section 316(a) of the Clean Water Act and pursuant to a proposed modification of NPDES Permit IL0004073. At the time of those submissions, in March 2016 and January 2017, this Department had no documentation that species listed as endangered or threatened by the Illinois Endangered Species Protection Board were present in the vicinity. Consequently, those consultations were closed without further evaluation by the Department.

Recently, the Department became aware of Case PCB-2018-049, now pending before the Illinois Pollution Control Board, filed on December 15, 2017, by Marathon Petroleum LLC to request a variance from the thermal standards contained in NPDES Permit IL0004073.

In reviewing the exhibits supporting Marathon's request, the Department noted that in September 2016 Marathon's consultant collected two specimens of the **Bigeye Chub**, *Hybopsis amblops*, at

Outfall 001, where the variance is proposed, as well as one specimen upstream of Outfall 001. This species is listed as "endangered" by the Illinois Endangered Species Protection Board, but was not identified as such at the time nor during the ensuing study to support the thermal variance request. It appears no consideration was given to this species' protected status when preparing the variance request, nor was this information available to the Department at the time of the prior consultations.

Pursuant to Part 1075.50 of Title 17 of the Illinois Administrative Code, the Department is re-opening the consultation process for the relevant consultations because new information pertaining to the presence of listed species in the vicinity is now available which was not previously considered.

Information supporting the Marathon filing suggests the Bigeye Chub may be unable to tolerate the proposed thermal variance. Further evaluation is necessary to determine whether Marathon may need permission from this Department, pursuant to the requirements of the Illinois Endangered Species Protection Act [520 ILCS 10] to take the Bigeye Chub, prior to seeking such a variance.

The Department recommends the Agency not take further action on the variance request until the Department and Agency can discuss and evaluate the implications of the presence of this species. Given that time is of importance, a meeting for this discussion should be arranged as soon as possible.

Sincerely,

Keith M. Shank, Chief
Impact Assessment Section
Office of Realty & Environmental Planning
Ph. (217) 785-5500
keith.shank@illinois.gov

cc: Virginia Yang, IDNR
Sara Terranova, IEPA

ATTACHMENT F

Terranova, Sara

From: Twait, Scott
Sent: Wednesday, September 05, 2018 4:35 PM
To: Terranova, Sara
Subject: FW: 316(a) submittals - Marathon

From: Twait, Scott
Sent: Wednesday, September 05, 2018 2:26 PM
To: Terranova, Sara <Sara.Terranova@Illinois.gov>
Subject: FW: 316(a) submittals - Marathon

From: Twait, Scott
Sent: Tuesday, January 09, 2018 8:48 AM
To: Ackerman, Mark (ackerman.mark@epa.gov) <ackerman.mark@epa.gov>
Subject: 316(a) submittals - Marathon

Mark,

Marathon has finished their 316(a) study and submitted it to the IPCB. It can be found at:

http://www.ipcb.state.il.us/COOL/external/CaseView.aspx?referer=results&case=15530

Comments are due to the Board by Jan. 29th. I am putting together IEPAs comments.

We have several 316(a) demonstrations in various states of completeness. I know that USEPA does not have an official capacity in 316(a) demonstrations, but we would like your guidance and comments on these. They have to send in an early screening to indicate what they are planning to study, a detailed study plan, (they usually send a draft), and the final petition to the IPCB. At what point would USEPA like to be involved?

Let me know if you have any comments or issues.

Thanks,
Scott

Scott Twait
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276
217-558-2012
217-782-9891 (fax)