ENVIRONMENTAL LAW & POLICY CENTER

ENVIRONMENTAL INTEGRITY PROJECT

May 9, 2025

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Office of Water Quality
Industrial NPDES Permits Section
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Sent via email

Re: Comments on Draft Permit IN0000108, BP Products North America Inc. – Whiting Refinery

Dear Ms. Wray,

Environmental Law and Policy Center, Environmental Integrity Project, Abrams Environmental Law Clinic, BP & Whiting Watch, Conservation Law Center, Environmental Advocacy Center, Gary Advocates for Responsible Development, the Izaak Walton League of America (IWLA) Indiana Division and IWLA Porter County Chapter, Just Transition Northwest Indiana, National Parks Conservation Association, Northern Lake County Environmental Partnership, Save the Dunes, the Sierra Club Hoosier Chapter, Southeast Environmental Task Force, and the Surfrider Foundation submit the following comments regarding the draft IN0000108 renewal wastewater permit for BP Products North America Inc. – Whiting Refinery.

To begin, Commenters appreciate that IDEM held a public hearing on April 22, 2025, and its presentations on NPDES permitting in general and the BP Whiting permit in particular. There is significant public interest in this facility and its impact on the health and well-being of neighboring communities. The public hearing was well-attended, and approximately 20 community members spoke about their concerns with this permit and the environmental impacts of the facility's Clean Water Act-related operations. Speakers specifically voiced concerns about the permit's impact on the health of Lake Michigan ecosystems, and the wildlife that surrounds the BP Whiting oil refinery, including migratory birds as well as numerous nesting pairs of bald eagles. Additionally, the community has serious concerns about the lack of transparency from IDEM and BP Whiting about past spills and leaks, the disposal of toxin-laden sludge, and the characterization of Outfalls 003 and 004 as stormwater discharge notwithstanding the decades of toxic disposal on the grounds that leach into those outfalls. Finally, community members are worried about BP Whiting's heavy metal discharges, including mercury, and the impact on their health – especially the most vulnerable among them such as life-long residents and children. The community requests that IDEM ensure BP Whiting's permit is adequate to protect health and water quality standards and is written in accordance with the Clean Water Act.

We also appreciate the opportunity to comment on the draft permit and for the hard work involved in writing an NPDES permit. We offer these comments with the aim of better protecting Indiana and federal waters and ensuring compliance with the federal Clean Water Act (CWA) and Indiana water quality laws and regulations.

Under the CWA and federal regulations, the IDEM BP Whiting NPDES permit must include several things. First, the CWA requires that permits control the specific kind of pollution generated at refineries through both federal and case-by-case technology-based limits (TBELs). 33 U.S.C. §§ 1311(b)(2); 40 CFR § 125.3(c)(2). Second, NPDES permits must include limits to protect receiving waters (WQBELs), including Lake Michigan. 33 USC 1311, 1312; 40 CFR Parts 122-125, Part 132. Third, NPDES permits must include monitoring that will accurately characterize the effluent. And fourth, for large facilities like the BP Whiting Refinery, NPDES permits must include provisions to reduce impingement and entrainment of fish and other aquatic organisms at cooling water intake structures.

IDEM did not meet these requirements in the Draft Permit. IDEM ignored many of the pollutants discharged by the BP Whiting refinery, failing to evaluate whether the pollutant required TBELs or WQBELs. IDEM failed to include required case-by-case (BPJ) TBELs for Outfalls 003, 004, and 005. IDEM failed to include the required WQBELs because the agency should not have used a mixing zone. IDEM should also have not granted BP's streamlined mercury variance (SMV) renewal application because it does not meet federal and state Great Lake requirements. IDEM failed to consider whether PFAS limits are needed to protect Lake Michigan's use as a source of drinking water. IDEM also failed to include the necessary monitoring in the permit. IDEM has incorrectly proposed adopting BP's alternative thermal effluent limits in the Draft Permit. Finally, IDEM has not taken the steps needed to ensure that BP complies with CWA Section 316(b).

We ask that IDEM address these deficiencies in the final permit in order to comply with federal and state law and to protect Lake Michigan and the Indiana Harbor Ship Channel.

I. BACKGROUND

A. BP Whiting Refinery, Draft Permit, and Receiving Waters

BP Whiting is a Class B Petroleum Refinery which receives crude oil by pipeline and refines it into a variety of products, including all grades of unleaded gasoline, aviation gasoline, jet fuels, kerosene, diesel fuel, low sulfur diesel fuel, turbine fuels, heating oils, gas oil, decanted oil, asphalt, petroleum coke, liquified petroleum gas (LPG), propylene, and sulfur.

The current permit became effective on April 1, 2019 and expired on April 1, 2024.

Table 1: BP Outfall Summary			
Outfall	**Contents of Discharges**	**Receiving Waters and Status**	**Max. Recorded Daily Flow Since April 1, 2019**
Outfall 002	Non-contact cooling water	Lake Michigan Shoreline, AU INC0163_G1075, and Lake Michigan, AU INM00G1000_00. Both are on the 2024 303(d) list for mercury and PCBs in fish tissue.	118.8 MGD
Outfall 003	Stormwater associated with industrial activity from the J&L and Lake George areas of the refinery	Indiana Harbor Ship Canal, AU INC0163_T1001. On the 2024 303(d) list for E.coli, Oil & Grease, and PCBs in fish tissue.	7.44 MGD
Outfall 004			4.623 MGD
Outfall 005	Treated process wastewater from normal refinery operations including recovered groundwater and stormwater	Lake Michigan Shoreline, AU INC0163_G1075, and Lake Michigan, AU INM00G1000_00. Both are on the 2024 303(d) list for mercury and PCBs in fish tissue.	28.1 MGD

The Lake Michigan receiving waters are designated for full body contact (recreational use), human health and wildlife (fishable use), public water supply, and warm water aquatic life (aquatic life use). Draft Fact Sheet at 68. Many people, including our members, fish, swim, watch wildlife, and catch fish to eat in and near these waters.

B. Legal Background: Clean Water Act and Indiana Water Quality Law

The federal CWA prohibits the discharge of a pollutant from a point source into "waters of the United States" unless authorized by and in compliance with a National Pollution Discharge Elimination System (NPDES) permit. 33 USC §§ 1311(a), 1342(b), 1342. Indiana law similarly prohibits discharges of pollutants that lack state authorization. Ind. Code § 13-30-2-1

Section 402 of the CWA, 33 U.S.C. § 1342, created the NPDES program, under which EPA may issue NPDES permits for point source discharges to waters of the United States. Section 402(b) of the Act, 33 U.S.C. § 1342(b), authorizes the EPA Administrator to delegate to the states the authority to issue NPDES permits. The state of Indiana, through IDEM, was delegated the

authority to issue NPDES permits in 1977 and now implements the federal permitting program.[1] As part of that program, IDEM must comply with federal NPDES permitting regulations as well as IDEM regulations. 40 CFR § 123.25.

II. IDEM Ignored Significant Pollutants Discharged by BP, Including Nutrients, Metals, VOCs, PAHs, and PFAS

When drafting NPDES permits, state permitting agencies like IDEM are expected to both research potential pollutants of concern and evaluate whether they require TBELs or WQBELs. EPA, *NPDES Permit Writer's Manual* at 4-15.[2] This research and review should include the values reported by the permittee in their certified discharge monitoring reports (DMR) and any other important information about the discharge, like EPA Toxic Release Inventory (TRI) Form Rs, technical reference documents about the effluent, industry, or raw materials; and related Clean Air Act permits "that could provide site-specific background information about the types of pollutants and wastestreams at a facility." *Id.* EPA's NPDES Permit Writer's Manual further notes that a permit writer is expected to research potential pollutants of concern even when the applicant states that the pollutants are "believed absent." *Id.*

This initial analysis of the "pollutants of concern" is critical to drafting a permit that meets federal and state laws. IDEM cannot establish the needed TBELs, WQBELs, and monitoring requirements when it ignores the existence of a pollutant entirely.

In 2019, EPA conducted a detailed 2019 study of the nation's refineries—including the BP Whiting Refinery. Attachment 3, EPA, *Detailed Study of the Petroleum Refining Category* (Sept. 2019) (EPA Refinery Study). This EPA Study identified a number of pollutants of concern at the nation's refineries that lack federal ELGs. *Id.* BP has disclosed that most of these pollutants of concern are also present in the BP Whiting Outfall 5 effluent, which is a combination of process wastewater, groundwater, and stormwater. *NPDES Permit (No. IN0000108) 2023 Renewal Application, BP Products North America Inc., Whiting Refinery* at pdf 54, Form 2C, Section V for Outfall 005 (Oct. 2, 2023) ("2023 Application").

IDEM, however, failed to consider most of these pollutants for TBELs, WQBELs, or even monitoring. *See* Draft Fact Sheet at Attachment 1 (RP Analysis); Draft Fact Sheet at 14 (TBEL discussion). In fact, most of these pollutants are never mentioned in the Fact Sheet. These pollutants are listed below in Table 2.

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[1] https://www.epa.gov/sites/default/files/2013-09/documents/in-moa-npdes.pdf
[2] https://www.epa.gov/sites/default/files/2015-09/documents/pwm_2010.pdf

Table 2, Pollutants Ignored by IDEM Despite Their Presence in the Discharge and Identification as Pollutants of Concern in 2019 EPA Refinery Study			
Pollutants	IDed as present in Application?	Discussed in Draft Fact Sheet, including RP?	EPA 2019 Study Pollutants of Concern
3,4-Benzofluoranthene (Benzo(b)fluoranthene) (PAH)	Present	No	X
Anthracene (PAH)	Present	No	X
Benzo(a)anthracene (PAH)	Present	No	X
Benzo(ghi)perylene (PAH)	Present	No	X
Benzo(k)fluoranthene (PAH)	Present	No	X
BTEX (benzene, toluene, ethylbenzene, xylene) (VOC)	Present	No	X
Cadmium, PD	Present	No	X
Fluoranthene (PAH)	Present	No	X
Fluorene (PAH)	Present	No	X
Indeno (1,2,3-cd) Pyrene (PAH)	Present	No	X
Naphthalene (PAH)	Present	No	X
Pyrene (PAH)	Present	No	X
Total Kjeldahl Nitrogen (TKN)	Present	No	X
Zinc	Present	No	X

2023 Permit Application at p. 24, OWQ Industrial NPDES Application 2C; Attachment 3, *EPA 2019 Refinery Study*. IDEM also failed to consider limits or monitoring for additional pollutants that BP marked as present and, in some cases, uses or manufactures at the Whiting refinery.

Table 3, Other Pollutants Ignored by IDEM Despite Their Presence in the BP Whiting Discharge			
Pollutants	IDed as present in Application?	Discussed in Draft Fact Sheet, including RP?	Substance currently used or manufactured including byproducts
1,2,4-Trimethylbenzene (VOC)	Present	No	X
2,3,7,8-Tetrachlorodibenzo-P-Dioxin (VOC)	Present	No	
Acenaphthene	Present	No	X
Acenaphthylene	Present	No	X
Acetone	Present	No	

Table 3, Other Pollutants Ignored by IDEM Despite Their Presence in the BP Whiting Discharge			
Pollutants	IDed as present in Application?	Discussed in Draft Fact Sheet, including RP?	Substance currently used or manufactured including byproducts
Aluminum	Present	No	
Antimony	Present	No	
Benzene (VOC)	Present	No	X
Bromoform	Present	No	
Chrysene	Present	No	X
Cobalt	Present	No	X
Cyanide	Present	No	
Cyclohexane	Present	No	
Magnesium	Present	No	
Methanol	Present	No	
Molybdenum	Present	No	
Naphthenic Acid	Present	No	
Nickel	Present	No	X
Nitrogen	Present	No	
Phenanthrene	Present	No	X
Phenolics (4AAP)	Present	No	
Propylene glycol	Present	No	X
Sulfide	Present	No	
Thallium	Present	No	
Toluene (VOC)	Present	No	X
Xylenes (VOC)	Present	No	X

2024 Application at 24, OWQ Industrial NPDES Application 2C at 4. BP has also disclosed releasing significant quantities of some of these ignored pollutants to Lake Michigan through stormwater, including thousands of pounds of zinc and phenol. Attachment 2, BP TRI Data. Outfall 005 includes stormwater. Draft Permit at 2.

Table 4, TRI Stormwater Discharges to Lake Michigan of Pollutants Ignored by IDEM	
Chemicals	**Pounds Discharged to Lake Michigan Through Stormwater, 2019-2023**
Benzene (part of BTEX)	24.00
Ethylbenzene	23.00
Nickel compounds	445.00
Phenol	2,030.00
Polycyclic aromatic compounds (PAHs)	6.80
Toluene (part of BTEX)	24.00
Zinc	7,460.00

These pollutants can pose significant dangers to receiving waters like Lake Michigan. For instance, the VOCs present like BTEX (benzene, toluene, ethylbenzene, xylene) are part of crude oil and commonly found at refineries. Attachment 4, EIP, *Oil's Unchecked Outfalls*: *Water Pollution from Oil Refineries and EPA's Failure to Enforce the Clean Water Act* at 24 (Jan. 2023). Many are harmful to human health at very low levels. For instance, benzene is so dangerous that the federal government has set a limit for drinking water of 0.005 mg/L.[3] BP discharged over 20 pounds of benzene during the permit term just through its stormwater. EPA has estimate refineries discharge 223 lbs. annually of BTEX. Attachment 3, EPA Refinery Report at 5-8.

BP has also attested that several Polycyclic aromatic hydrocarbons (PAHs), which are naturally found in oil, are present in its Outfall 005 effluent, PAHs are a large group of carcinogenic organic compounds and accumulate in sediments, aquatic organisms, and plants.[4] Benzo[g,h,i]perylene in particular binds to sediments and particles in water.[5] Depending on the dose, chronic exposure to PAHs can have negative renal, gastrointestinal, and dermatologic effects.[6] PAHs have been detected in some U.S. drinking water supplies.[7]

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[3] https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations
[4] Agency for Toxic Substances and Disease Registry, "Where are PAHs found?", https://www.atsdr.cdc.gov/csem/polycyclic-aromatic-hydrocarbons/where_are_pahs_found.html
[5] Swedish Pollutant Release and Transfer Register, "Benzo(g,h,i)perylene, a PAH," https://utslappisiffror.naturvardsverket.se/en/Substances/Other-organic-substances/BenzoGHIperylene/
[6] Agency for Toxic Substances and Disease Registry, "What Health Effects are Associated with PAH Exposure?", https://www.atsdr.cdc.gov/csem/polycyclic-aromatic-hydrocarbons/health_effects.html
[7] Agency for Toxic Substances and Disease Registry, Public Health Statement for Polycyclic Aromatic Hydrocarbons (PAHs), https://wwwn.cdc.gov/TSP/PHS/PHS.aspx?phsid=120&toxid=25

Finally, IDEM's failure to consider nitrogen pollution could harm Lake Michigan. Nitrogen degrades the suitability of waters as aquatic habitat and contributes to the growth of toxic algae blooms, which impair drinking water sources and otherwise degrade the Great Lakes. The permit does limit ammonia/nitrate, but that is not a substitute for limiting the quantities and concentration of total nitrogen. Even with ammonia ELGs, 81 refineries dumped an estimated 15.7 million pounds of total nitrogen into public waterways in 2021, equivalent to the amount discharged by about 128 municipal wastewater treatment plants. Attachment 4, EIP, *Oil's Unchecked Outfalls*: at 18.

In sum, IDEM must now consider the pollutants discharged by BP Whiting but ignored in the Draft Permit, including the pollutants listed in Tables 2 and 3. As part of that consideration, IDEM must evaluate them for case-by-case TBELs, as discussed in Section III; for WQBELs, as discussed in Section IV; and for monitoring, as discussed in Section VIII. Many of these pollutants may also require development of Tier II values for toxins without water quality standards as required by the federal Great Lakes Initiative regulations, 40 CFR Part 132.

III. IDEM Must Add Case-By-Case Technology-Based Limits to the BP Whiting Permit

The CWA requires that permits include TBELs for conventional pollutants based on the best conventional technology (BCT) and TBELs for all toxic and nonconventional pollutants based on the best available treatment technology economically achievable (BAT). 33 U.S.C. §§ 1311(b)(2), 1317(a)(1), 1317(a)(2).

BCT limits for pollutants like total suspended solids, biological oxygen demand (BOD), and oil and grease must be based on the reasonableness of the relationship between the costs of attaining a reduction in effluents and the effluent reduction benefits derived, a comparison of treatment with publicly owned wastewater plants, and other factors. 33 U.S.C. § 1314(b)(4)(A).

BAT limits for toxic and nonconventional pollutants must be based, at a minimum, "on the performance of the single best-performing plant in an industrial field." *Sw. Elec. Power Co. v. EPA*, 920 F.3d 999, 1006 (5th Cir. 2019) (quoting *Chem. Mfrs. Ass'n v. EPA*, 870 F.2d 177, 226 (5th Cir. 1989)); *see also Kennecott v. EPA*, 780 F.2d 445, 448 (4th Cir. 1985) ("In setting BAT, EPA uses not the average plant, but the optimally operating plant, the pilot plant which acts as a beacon to show what is possible."). BAT "may reflect a higher level of performance than is currently being achieved based on technology transferred from a different subcategory or category, bench scale or pilot plant studies, or foreign plants." 89 Fed. Reg. 40198, 40202 (May 9, 2024); *see also Kennecott*, 780 F.2d at 453. BAT must represent the "gold standard for controlling water pollution from existing sources." *Sw. Elec. Power Co.*, 920 F.3d at 1003.

As noted, EPA has established BAT TBELs in federal regulations for petroleum refineries, called ELGs. 40 CFR Part 421. These were last revised in 1985 and limit only one toxic metal (chromium)

and one other toxic pollutant (phenolic compounds).[8] 50 Fed. Reg. 28516, 28517 (July 12, 1985). The Subpart B, Cracking Subcategory, ELGs apply to the BP Whiting refinery. 2023 Application at 24.

IDEM incorporated the Subpart B refinery ELGs into the BP Whiting Draft Permit. Draft Fact Sheet at 15. However, incorporating ELGs is only part of IDEM's duty regarding TBELs. When "EPA-promulgated effluent limitations are inapplicable," meaning there are no ELGs for a pollutant, IDEM is required to step in and, using the technology and cost factors listed in 40 CFR § 125.3(c)(2) and 40 CFR § 125.3(d)(3), establish case-by-case BAT TBELs for all toxic and nonconventional pollutants known to be present in the discharge. 40 CFR § 125.3(c)(2); *see also* Comment to 40 CFR § 125.3 ("These factors must be considered in all cases, regardless of whether the permit is being issued by EPA or an approved State").

IDEM has a mandatory duty to establish case-by-case BAT TBELs for all known toxic and nonconventional pollutants in this permit. CWA Section 301(b)(2)(A) requires limits "which (i) shall require application of the best available technology economically achievable," i.e., BAT, "for pollutants identified in subparagraphs (C), (D), and (F) of this paragraph." 33 USC § 1311(b)(2)(A). The CWA's reference to "pollutants identified in subparagraphs (C), (D), and (F) of this paragraph" means all known toxic and nonconventional pollutants. Subparagraph C identifies all toxic pollutants referred to in Congress's "Committee Print No. 95-30, House Committee on Public Works and Transportation," which was codified at 40 CFR § 401.15 and includes nickel, lead, mercury, and zinc. 33 USC § 1311(b)(2)(C). Subparagraph D identifies all toxic pollutants other than those listed in Committee Print No. 95-30. *Id.* § 1311(b)(2)(D). Subparagraph F then identifies "**all** pollutants" except those covered by the preceding subparagraphs and Subparagraph E, which addresses conventional pollutants. *Id.* § 1311(b)(2)(F) (emphasis added).

EPA's TBEL regulation follows this same structure, stating that "[p]ermits **shall** contain" BAT limits for the toxic pollutants listed in Committee Print No. 95-30, other toxics, and all pollutants which are neither toxic nor conventional. 40 CFR § 125.3(a)(2). The CWA regulation then makes explicit that this TBEL requirement does not only apply when there are ELGs—the regulation states that there are two methods of applying these TBELs: ELGs and "[o]n a case-by-case basis." 40 CFR § 125.3(c)(1), (c)(2). EPA further affirmed that such case-by-case TBELs are required in 2010, directing that "an authorized state ***must*** include technology-based effluent limitations in its permits for pollutants not addressed by the effluent guidelines for that industry." EPA, *NPDES Permitting of Wastewater Discharges from Flue Gas Desulfurization (FGD) and Coal Combustion*

[8] EPA, *Final Development Document for Effluent Limitation Guidelines and Standards for the Petroleum Refining Point Source Category*, at 122, 124 (Oct. 1982).

Residuals (CCR) Impoundments at Steam Electric Power Plants, Attachment 2 at 2 (June 7, 2010) (emphasis added).[9]

To develop these case-by-case TBELs based on BAT, IDEM is to use the factors in 33 USC § 1314(b) and 40 CFR § 125.3(d)(2), including the reasonableness of the relationship between the costs of attaining a reduction in effluent and the effluent reduction benefits derived. *See also* EPA Permit Writers' Manual at 5-46 (Factors Considered When Developing Case-by-Case TBELs).

A. Outfall 5 Requires Additional Technology-Based Limits

When EPA set ELGs for oil refineries decades ago, the agency restricted discharges of only one toxic metal (chromium) and one other toxic pollutant (phenolic compounds).[10] Many other pollutants are commonly present in petroleum wastewater and discharged through Outfall 005, but IDEM failed to evaluate these pollutants for the required case-by-case BAT TBELs. These include the pollutants discussed above in Section II and the pollutants IDEM evaluated for WQBELs with a reasonable potential analysis. We ask that IDEM develop case-by-case BAT TBELs for these toxic and nonconventional pollutants:

- 1,2,4-Trimethylbenzene (VOC)
- 2,3,7,8-Tetrachlorodibenzo-P-Dioxin (VOC)
- 3,4-Benzofluoranthene (Benzo(b)fluoranthene) (PAH)
- Acenaphthene
- Acenaphthylene
- Acetone
- Aluminum
- Anthracene (PAH)
- Antimony
- Arsenic
- benzene
- Benzo(a)anthracene (PAH)
- Benzo(a)pyrene (PAH)
- Benzo(ghi)perylene
- Benzo(k)fluoranthene
- Bromoform
- BTEX (benzene, toluene, ethylbenzene, xylene)
- Cadmium, PD
- Chloride
- Chrysene
- Cobalt (total)
- Copper
- Cyanide
- Cyclohexane
- Fluoranthene (PAH)
- Fluorene (PAH)
- Fluoride
- Indeno (1,2,3-cd) Pyrene
- Lead
- Magnesium
- Manganese

[9] https://www3.epa.gov/region1/npdes/merrimackstation/pdfs/ar/AR-1564.pdf.
[10] EPA, Final Development Document for Effluent Limitation Guidelines and Standards for the Petroleum Refining Point Source Category, at 122, 124 (Oct. 1982) ["1982 TDD"]; see NRDC v. Train, 8 ERC 2120, 2122 (D.D.C.1976); see Consent Decree, NRDC et al. v. Train (D.D.C. Jun. 9, 1976), available at https://www.elr.info/sites/default/files/litigation/6.20588.htm.

- Mercury
- Mercury
- Methanol
- Molybdenum
- Naphthalene (PAH)
- Naphthenic Acid
- Nickel (total)
- Nitrate-Nitrite
- Nitrogen
- Phenanthrene
- Propylene glycol
- Pyrene (PAH)
- Selenium
- Selenium
- Strontium
- Sulfate
- Sulfide
- Thallium
- Toluene
- Total Dissolved Solids
- Total Kjeldahl Nitrogen (TKN)
- Total Residual Chlorine
- Vanadium
- Xylenes
- Zinc (total)

B. Stormwater Outfalls 003 and 004 Require Additional TBELs

The CWA's TBEL requirements are not limited to process water outfalls. 33 USC § 1311(b). In fact, the petroleum refinery ELGs include limits for stormwater. 40 CFR § 419.23(f). However, the refinery stormwater ELGs only limit Total Organic Carbon (TOC) unless TOC exceeds 110 mg/L, at which point limits for phenolic compounds, total chromium, hexavalent chromium, and chemical oxygen demand (COD) apply. 40 CFR § 419.23(f)(1). The Draft Permit only includes limits for TOC, oil and grease, and pH at stormwater Outfalls 003 and 004. Draft Permit at 4.

The BP Whiting Refinery stormwater contains a host a harmful pollutants. BP has reported through EPA's Toxic Release Inventory that the Whiting refinery discharged significant quantities of ammonia, zinc, phenols, lead, nitrates, BTEX, and copper through stormwater during the current permit term. Attachment 2, BP Whiting TRI Reports.

Table 5, TRI Data --Toxics Discharged by BP Whiting in Stormwater , 2019-2023

Chemical	**Total Pounds Discharged to Surface Waters through Stormwater, 2019-2023**
Ammonia	7,020
Benzene	24
Copper compounds	39
Ethylbenzene	23
Hydrogen sulfide	1,220
Lead And Lead Compounds	101.1
Mercury And Mercury Compounds	0.4

Table 5, TRI Data --Toxics Discharged by BP Whiting in Stormwater , 2019-2023	
Chemical	**Total Pounds Discharged to Surface Waters through Stormwater, 2019-2023**
Nickel compounds	445
Nitrate compounds	4,470,000
Phenol	2,098
Polycyclic aromatic compounds	7.70
Toluene	24
Vanadium compounds	562
Zinc compounds	7,460

Attachment 2, *BP Whiting TRI Data*. Additional pollutants may be present in the BP Whiting stormwater as well—the TRI only includes data for the release of certain toxics. Moreover, EPA has warned permit applicants that industrial stormwater is likely to contain the pollutants associated with the facility's industrial processes. *See* EPA, *NPDES Permit Application Form 2C Instructions* at 2C-3 ("For example, if you manufacture pesticides, you should expect those pesticides to be present in contaminated stormwater runoff.").[11]

In addition, Outfalls 003 and 004 at the BP Whiting Refinery has a higher than average risk of containing other harmful toxics because it includes runoff from the J&L Highlands area, which was used as an industrial waste landfill. 2023 Application at PDF 107.

We ask that IDEM, at a minimum, establish TBELs for BTEX, copper, lead, phenol, PAHs, sulfides, selenium, TDS, TSS, and zinc at Outfalls 003 and 004. We further ask that IDEM require monitoring for the additional pollutants found in BP's process water.

IV. IDEM Must Revise its Outfall 005 WQBEL Analyses Because It Cannot Rely Upon Its 2006 Mixing Zone Decisions

It is a foundational CWA requirement that NPDES permits include the terms and conditions needed to achieve state water quality standards. 40 CFR §§ 122.44(d)(1), 122.44(d)(1)(i); 327 IAC 5-2-11.5(a). To achieve these water quality standards, IDEM must include limits based on the receiving waters' standards, called WQBELs. If IDEM "determines that a substance is or may be discharged into the Great Lakes system at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any numeric criterion IDEM must include WQBELs for such pollutants in the permit. 327 IAC 5-2-11.6(a). This evaluation is called a reasonable potential or RP analysis.

[1111] https://www.epa.gov/sites/default/files/2020-04/documents/form_2c_epa_form_3510-2cr.pdf

In the Outfall 005 RP analysis for BP Whiting, IDEM applied a dilution factor of 37.1 for all of the pollutants except mercury and selenium, which effectively dropped these pollutants from consideration for WQBELs. Draft Fact Sheet at 13; Draft Fact Sheet, Attachment 1 (Waste Load Allocation) at 2. IDEM established the 37.1 dilution factor based on its 2006 review of BP's mixing zone application. Draft Fact Sheet at 13; IDEM, *2006 Wasteload Allocation Report*. BP submitted mixing zone data in a 1998 report, a 1999 letter, and an updated 2002 report. IDEM, *Scope of Work Mixing Zone Approval* at 2 (2005).

The approval of mixing zones is no small matter. Mixing zones are a narrow exception to the foundational CWA rule above that NPDES permits include the terms needed to achieve water quality standards, allowing water quality standards to be exceeded in a particular area only when certain criteria are met. Indiana has specific regulations for establishing mixing zones in the Great Lakes. 327 IAC 5-2-11.4; IDEM, *Scope of Work Mixing Zone Approval* (2005).[12]

Alternate mixing zones in the Great Lakes, "are granted on a pollutant-by-pollutant and criterion-by-criterion basis." 327 IAC 5-2-11.4(b)(4)(A). The application must:

> (ii) Document the amount of dilution occurring at the boundaries of the proposed mixing zone and the size, shape, and location of the area of mixing, including the manner in which diffusion and dispersion occur.
>
> (iii) For sources discharging to the open waters of Lake Michigan, define the location at which discharge-induced mixing ceases.
>
> …
>
> (v) Document the physical, including substrate character and geomorphology, chemical, and biological characteristics of the receiving waterbody, including whether the receiving waterbody supports indigenous, endemic, or naturally occurring species.
>
> (vi) Document the physical, chemical, and biological characteristics of the effluent.
>
> (vii) Document the synergistic effects of overlapping mixing zones or the aggregate effects of adjacent mixing zones.

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[12] Doc. 58343115, https://ecm.idem.in.gov/cs/idcplg?IdcService=GET_FILE&dID=3477163&dDocName=58343115&Rendition=web&allowInterrupt=1&noSaveAs=1

327 IAC 5-2-11.4(b)(4)(A). In addition, IDEM can only approve a mixing zone when:

> (ii) The level of the pollutant permitted in the waterbody would not likely jeopardize the continued existence of any endangered or threatened species listed under Section 4 of the ESA or result in the destruction or adverse modification of such species' critical habitats.
>
> (iii) The mixing zone would not extend to drinking water intakes.
>
> (iv) The mixing zone would not impair or otherwise interfere with the designated or existing uses of the receiving water or downstream waters.
>
> (v) The mixing zone would not promote undesirable aquatic life or result in a dominance of nuisance species.
>
> (vi) By allowing the additional mixing:
>
> > (AA) substances will not settle to form objectionable deposits;
> >
> > (BB) floating debris, oil, scum, and other matter in concentrations that form nuisances will not be produced; and
> >
> > (CC) objectionable color, odor, taste, or turbidity will not be produced.

327 IAC 5-2-11.4(b)(4)(B).

For the reasons below, IDEM should not have relied upon a mixing zone for the Draft Permit's reasonable potential calculations.

A. IDEM Does Not Demonstrate That the Draft Permit's Mixing Zone Protects Designated Uses Inside the Mixing Zone

A key requirement of a mixing zone is that it "not impair or otherwise interfere with the designated or existing uses of the receiving water or downstream waters." 327 IAC 5-2-11.4(b)(4)(B)(iv); *see also* EPA, *Water Quality Standards Handbook, Chapter 5: General Policies* at 9 (same).[13] Here, the waters in the mixing zone are the Lake Michigan Shoreline, AU INC0163_G1075 segment, and the Lake Michigan, AU INM00G1000_00 segment. Draft Fact Sheet at 1. Both are designated

[13] https://www.epa.gov/sites/default/files/2014-09/documents/handbook-chapter5.pdf

for full body contact (recreational use), human health and wildlife (fishable use), public water supply, and warm water aquatic life (aquatic life use). Draft Fact Sheet at 68.

Neither the 2006 IDEM decision, the 2005 Mixing Zone Scope of Work, or the Draft Permit appear to evaluate whether or not Lake Michigan's designated uses will be impaired in the mixing zone. IDEM, *2006 Wasteload Allocation Report*; IDEM, *Scope of Work Mixing Zone Approval* at 6 (2005). This is not an academic question—people, including Commenters, use the waters near the BP Whiting Refinery (and presumably in the mixing zone) for these designated uses. People use waters in the mixing zone to swim and surf, birdwatch, and to catch fish they then consume.

Without a specific demonstration from IDEM that the mixing zone does not impair the designated uses, it much be assumed that it does. Due to the mixing zone, BP is free to discharge arsenic, chromium (III), hexavalent chromium, total chromium, copper, lead, manganese, vanadium, benzo(a)pyrene, ammonia, fluoride, nitrate-n + nitrite-n, sulfate, fluoride, and other pollutants at levels far above what is safe for fish or drinking water. BP's discharges may have already harmed these uses in the mixing zone. For instance, in June 2022 the Outfall 005 effluent contained lead at concentrations above EPA's chronic aquatic life criteria,[14] and in December 2022, the Outfall 005 effluent contained Benzo[a]pyrene at concentrations above the drinking water standard.[15]

Before IDEM can rely upon this mixing zone for the BP Whiting permit, IDEM must demonstrate that the mixing zone will not impair the full body contact (recreational use), human health and wildlife (fishable use), public water supply, or warm water aquatic life (aquatic life use). To do this, IDEM must provide a map of the mixing zone and explain how all four designated uses will be protected in the mixing zone on a pollutant-by-pollutant basis. If IDEM cannot do this, it cannot use the 37.1 dilution ratio in the permit's reasonable potential analysis.

B. IDEM Has Not Made the "Pollutant-by-Pollutant" Mixing Zone Approvals Required by 327 IAC 5-2-11.4

Alternate mixing zones in the Great Lakes, "are granted on a pollutant-by-pollutant and criterion-by-criterion basis." 327 IAC 5-2-11.4(b)(4)(A).

IDEM violated this requirement in the Draft Permit's reasonable potential analysis when the Agency used the mixing zone and applied the 37.1 dilution ratio to two pollutants, Nitrate-Nitrite and Total Residual Chlorine, that were not identified as pollutants of concern in IDEM's 2006 mixing zone review, *i.e.,* IDEM's "pollutant-by-pollutant" mixing zone approval. Draft Fact Sheet Attachment 1 at Table 1; IDEM, *2006 Wasteload Allocation Report* at 10. It is also unclear whether

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[14] 0.0026 mg/L sample, .0025 mg/L freshwater aquatic life criteria. https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table

[15] 0.00021 mg/L sample, MCL is .0002 mg/L.

IDEM made such "pollutant-by-pollutant" approvals in 2006 for other pollutants in the Draft Permit's reasonable potential analysis, including total dissolved solids, chloride, and ammonia. *See* IDEM, *2006 Wasteload Allocation Report* (mention but no discussion of TDS and chloride mixing zones); IDEM, *Scope of Work Mixing Zone Approval* at 6 (2005) (appearing to decide to exclude ammonia from the mixing zone calculations).

These mistaken applications of the mixing zone could do critical harm to Lake Michigan. For instance, in the past permit term BP Whiting lacked nitrate limits and discharged millions of pounds of nitrates, which is highly toxic to babies in drinking water, to Lake Michigan. Attachment 2, BP Whiting TRI Data.

The 2006 mixing zone approval also failed to identify many of pollutants that *should* have been the subject of a reasonable potential analysis because they are discharged by the BP Whiting refinery. See supra, Section II (listing pollutants that IDEM failed to consider for WQBELs). The following pollutants were not identified as pollutants of concern in IDEM's 2006 mixing zone review but <u>are</u> present in BP's effluent:

- 1,2,4-Trimethylbenzene
- 2,3,7,8-Tetrachlorodibenzo-P-Dioxin
- 3,4-Benzofluoranthene (Benzo(b)fluoranthene) (PAH)
- Acenaphthene
- Acenaphthylene
- Acetone
- Anthracene (PAH)
- benzene
- Bromoform
- BTEX (benzene, toluene, ethylbenzene, xylene)
- Cyanide
- Cyclohexane
- Indeno (1,2,3-cd) Pyrene
- Magnesium
- Methanol
- Naphthalene (PAH)
- Naphthenic Acid
- Nitrogen
- Phenanthrene
- Phenolics (4AAP)
- Phosphorus
- Propylene glycol
- Pyrene (PAH)
- Toluene
- Total Kjeldahl Nitrogen (TKN)
- Xylenes

IDEM, *2006 Wasteload Allocation Report* at 10; *see also* 2023 Application at Form 2C. Any mixing zone study and dilution ratio approval must consider these pollutants, some of which, like BTEX and nitrogen, behave quite differently than metals.

IDEM can only approve alternate mixing zones in the Great Lakes on a pollutant-by-pollutant basis. 327 IAC 5-2-11.4(b)(4)(A). If IDEM has not approved a specific pollutant for a mixing zone, it cannot use the mixing zone in a reasonable potential analysis for that pollutant.

C. The Draft Permit's Mixing Zone Relies Upon Outdated Information

IDEM also cannot rely upon its existing mixing zone in the Draft Permit because the mixing zone studies and IDEM's mixing zone decisions are outdated and exclude critical pollutants.

IDEM's 2006 mixing zone decision is almost 20 years old and relies upon data even older. IDEM, *Wasteload Allocation Report for BP Products in Lake County* (IN0000I08, WLA000541) (July 28, 2006) ("2006 Wasteload Allocation Report")[16]; IDEM, *Scope of Work Mixing Zone Approval* at 2 (2005).[17] Many of the factors important to the legal validity of mixing zones are likely to have changed during that time, including the specifics of uses of Lake Michigan, including drinking water intake locations and fish consumption data; physical, including substrate character and geomorphology, chemical, and biological characteristics of the receiving waterbody; whether the Lake Michigan supports indigenous, endemic, or naturally occurring species; the extent of discharge-induced mixing, which can be affected by Lake Michigan water levels and temperatures. 327 IAC 5-2-11.4(b)(4); *see also* IDEM, *Scope of Work Mixing Zone Approval* (2005). In addition, IDEM or neighboring states may have approved additional, overlapping mixing zones in the last twenty years. 327 IAC 5-2-11.4(b)(4)(A)(vii).

D. The Mixing Zone Was Adopted Without Adequate Public Participation

The CWA requires public participation in decisions that affect effluent limits. *See* 33 USC § 1251(e) ("Public participation in the **development, revision,** and enforcement of **any … effluent limitation** … established by the Administrator or any State under this chapter shall be provided for, encouraged, and assisted by the Administrator and the States") (emphasis added). IDEM regulations then specifically require that applications for an alternate mixing zone be put to public notice and comment and, if requested, a public meeting. 327 IAC 5-2-11.4(F)(4)(F).

Despite these requirements, IDEM's 2005-2006 decisions regarding the mixing zone appear to have been made in a kind of 1:1 negotiations with BP and without any opportunity for the public to weigh in. *See, e.g.*, IDEM, *Scope of Work Mixing Zone Approval* at 6 (2005) (describing agreements worked out with BP). A decision as critical as a mixing zone approval, which determines almost all of the WQBELs in this permit cannot be determined in a closed-door conference with only the permittee, which violates the purpose of the IDEM regulation and the CWA's command that IDEM provide for and encourage public participation in effluent limits. 33 USC § 1251(e).

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[16] Doc. 58318088, https://ecm.idem.in.gov/cs/idcplg?IdcService=GET_FILE&dID=3539525&dDocName=58318088&Rendition=web&allowInterrupt=1&noSaveAs=1

[17] Doc. 58343115, https://ecm.idem.in.gov/cs/idcplg?IdcService=GET_FILE&dID=3477163&dDocName=58343115&Rendition=web&allowInterrupt=1&noSaveAs=1

In sum, the Draft Permit's reasonable potential analysis relies upon a mixing zone that does not meet IDEM Great Lakes regulations, may impair designated uses in the mixing zone, relies on outdated information, and fails to include the required pollutant-by-pollutant approval for a number of pollutants discharged by BP. IDEM cannot rely upon it to establish WQBELs at the BP Whiting refinery. We ask that IDEM conduct a new reasonable potential analysis that do not rely upon the mixing zone but instead is calculated to ensure that BP Whiting's discharges do not cause or contribute to any exceedances of the Lake Michigan water quality standards. We further ask that this RP analysis include not only the pollutants listed in the existing RP analysis, but all of the facility's known pollutants, including those listed in Tables 2 and 3 above.

V. IDEM Should Evaluate Stormwater Outfalls 003 and 004 for WQBELs

As discussed above, the BP Whiting Refinery stormwater contain more pollutants than the current permits monitors or limits, including significant quantities of BTEX, copper, lead, phenol, PAHs, and zinc. *Supra*, Section III.B. It is also likely that the runoff contains significant quantities of salts, like chloride and TDS. *See* Attachment 4, EIP, *Oil's Unchecked Outfalls* at 22 (refineries discharged over a billion pounds of salts in 2021).

This stormwater has the potential to harm the fragile water quality of the Indiana Harbor Ship Canal, whose aquatic life use is already impaired due to oil and grease and PCBs in fish tissue. Draft Fact Sheet at 14.

To protect the Indiana Harbor Ship Canal, IDEM must evaluate the Outfalls 003 and 004 stormwater effluent in order to ensure that the discharges do not have the reasonable potential to cause or contribute to a water quality exceedance. 40 CFR §§ 122.44(d)(1), 122.44(d)(1)(i); 327 IAC 5-2-11.5, 11.6. WQBELs are likely needed, at a minimum, for phenols, copper, and zinc.

VI. IDEM Must Not Approve the Streamlined Mercury Variance (SMV)

IDEM has proposed renewing BP's streamlined mercury variance (SMV) in the Draft Permit. Draft Permit Public Notice at 1. Commenters oppose the continued renewal of the SMV because the renewal fails to comply with state and federal requirements for Great Lake variances.

Mercury in Lake Michigan bioaccumulates, meaning that organisms higher in the food chain will have a higher concentration of mercury (specifically methylmercury) in their tissues and blood. This means that "[m]ethylmercury levels in predatory fish are typically more than one million times higher than methylmercury levels in water that the fish inhabit."[18] Consumption of

18 Water Science School, United States Geological Survey, Mercury Contamination of Aquatic Environments, November 13, 2018, available at: https://www.usgs.gov/special-topics/water-science-school/science/mercury-contamination-aquatic-environments.

organisms that are contaminated with mercury cause serious health risks up the food chain to fish, birds, and humans alike.[19] To protect Lake Michigan aquatic life, the Lake Michigan water quality standard for mercury is a monthly average of 1.3 ng/L and a daily maximum of 3.2 ng/L.

Unfortunately, due to atmospheric deposition from coal plants and point source discharge from industries like the BP Whiting oil refinery, Lake Michigan exceeds those water quality standards for mercury, impairing both aquatic life and the health of the people and animals that eat Lake Michigan fish. For instance, Indiana recommends that some Lake Michigan fish only be eaten once a month in order to prevent mercury poisoning.[20] Both Indiana and Wisconsin include Lake Michigan on their 303(d) list of impaired waters for mercury, designating it as requiring a Total Maximum Daily Load (TMDL) to achieve compliance with water quality standards,[21] while Illinois already has a mercury TMDL for Lake Michigan.[22]

In order to not worsen the existing aquatic life impairment, IDEM established concentration limits for mercury that match the water quality standard: a monthly average of 1.3 ng/L and a daily maximum of 3.2 ng/L. Draft Permit at 2. However, Indiana regulations provide for a mercury variance, called the SMV, that allows a permittee to discharge more mercury than is safe for Lake Michigan aquatic life while the permittee reduces its mercury loading through a "pollution management program plan," or PMPP. 327 IAC 5–3.5. Here BP has requested an adjusted limit of 6.3 ng/L as an annual average for mercury, which is more than 5 times both the chronic (average monthly) Lake Michigan water quality standard for mercury.

BP originally applied for a SMV in 2010 and was granted it in 2012 in a permit modification. BP's current April 1, 2019 permit includes a renewed SMV. 2019 Permit at 70. BP applied for another renewal of its SMV in its October 2023 application. 2023 Application at Appendix 13. If this SMV is approved, BP will have had a mercury variance for 20 years.

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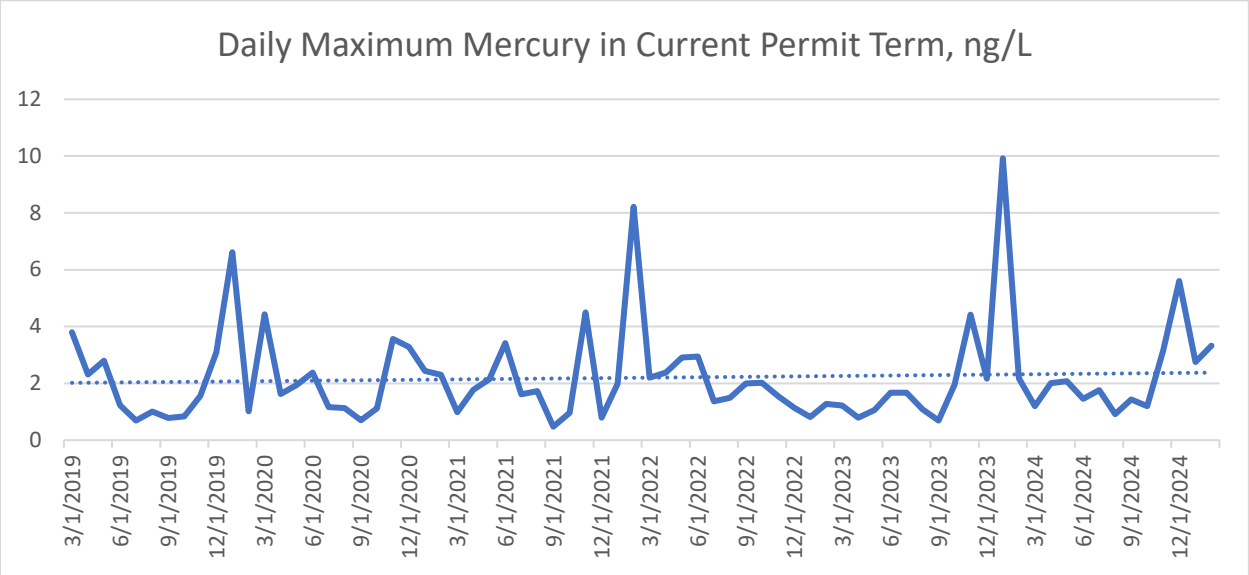
19 *See e.g.*, US EPA, Health Effects of Exposures to Mercury, last updated on December 5, 2024, available at: https://www.epa.gov/mercury/health-effects-exposures-mercury; US EPA, Basic Information about Mercury, last updated on December 5, 2024, available at: https://www.epa.gov/mercury/basic-information-about-mercury.
20 Indiana Department of Health, Fish Consumption Guidelines Map, last accessed May 5, 2025, available at: https://www.in.gov/health/eph/fish-consumption-advisory/.
21 *See* Indiana Department of Environmental Management, Section 303(d) List of Impaired Waters, last accessed on May 5, 2025, available at: https://www.in.gov/idem/nps/watershed-assessment/water-quality-assessments-and-reporting/section-303d-list-of-impaired-waters/; Wisconsin Department of Natural Resources, Water Condition Lists, last accessed on May 5, 2025, available at: https://dnr.wisconsin.gov/topic/SurfaceWater/ConditionLists.html. *See also* Fact Sheet, p. 14 ("Lake Michigan Shoreline, Assessment-Unit INC0163_G1075, HUC 40400010603, is on the 2024 303(d) list for mercury in fish tissue and PCBs in fish tissue. Lake Michigan, Assessment-Unit INM00G1000_00, is on the 2024 303(d) list for mercury in fish tissue and PCBs in fish tissue.").
22 *See* Illinois Environmental Protection Agency, Illinois Lake Michigan Nearshore Watershed Mercury TMDL Report, April 2019, available at: https://epa.illinois.gov/content/dam/soi/en/web/epa/topics/water-quality/watershed-management/tmdls/documents/final-illinois-lake-michigan-nearshore-mercury-tmdl-report-april-2019.pdf;

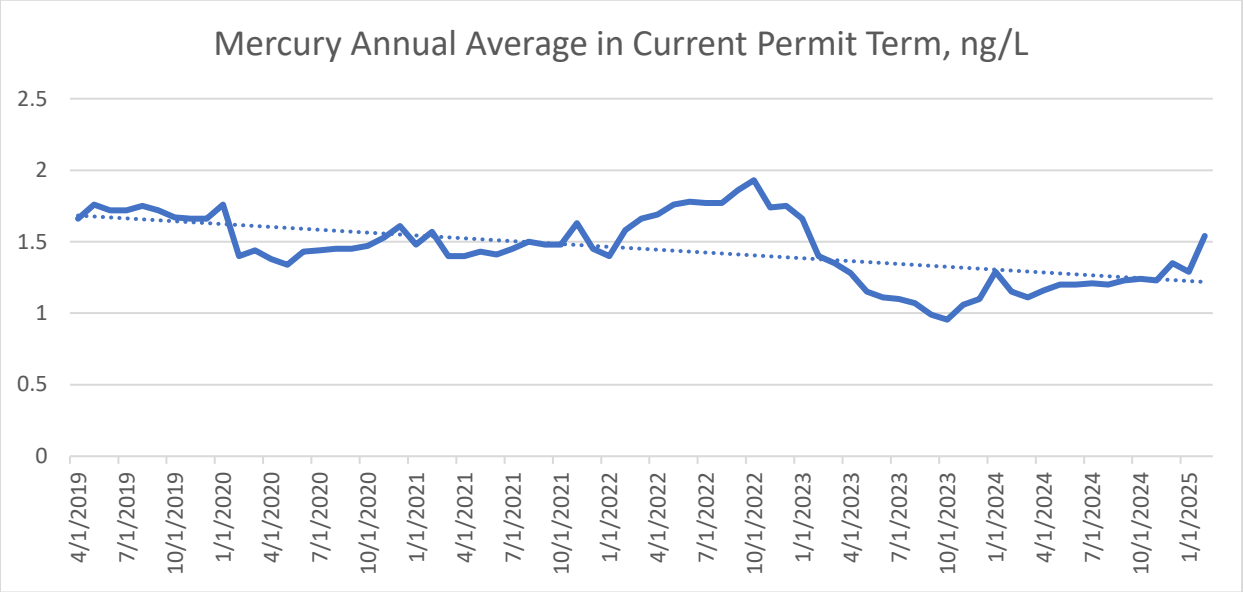
A. BP Has Not Shown the Progress Needed for SMV Renewal

In order for IDEM to renew a SMV, the applicant must demonstrate "that implementation of the PMPP has achieved progress toward the goal of reducing mercury from its discharge except as provided in subsection (d)." 327 IAC 5-3.5-7(a). Subsection (d) then provides that "[a] PMPP must be revised if implementation of the original PMPP does not lead to demonstrable progress in minimizing the discharge of mercury." 327 IAC 5-3.5-7(d).

Based on the mercury samples in this permit term, BP's current PMPP has not achieved progress towards the goal of reducing mercury. Since the current permit became effective on April 1, 2019, there has been no reduction in daily mercury concentrations—in fact, the trendline indicates a slight increase. Attachment 1, BP Whiting DMR Data.



Moreover, there has been almost no reduction in BP's annual average mercury samples—the January 2025 annual average of 1.54 ng/L is almost exactly the same as the April 2019 annual average of 1.6 ng/L.



BP's lack of progress is not surprising, given the fact that the current PMPP does not actually require the installation of treatment to meet mercury limits. Draft Permit at 73, 74 (existing PMPP).[23] Instead, BP's activities appear to mostly compromise of good housekeeping, various assessments, and responsibly disposing of mercury-containing products like light bulbs. 2023 Permit Application at PDF 408-409.

The revisions BP proposes to its PMPP in the 2023 permit application do not remedy the problems with the existing ineffectual PMPP. 2023 Permit Application at PDF 401. In the 2023 Application, BP Whiting supposedly introduced four "new" activities for the PMPP revision, but several of them are old provisions that have just been repackaged, and none of the activities are measured in terms of reduction in mercury discharge. BP Whiting's very first planned activity included training on "purchasing policies, recycling practices, proper handling and disposal techniques, spill contamination procedures, and other pollution prevention measures." 2023 Permit Application, Attachment SMV-2, pdf p. 428. And activity 8 includes replacement and substitution of mercury-containing chemicals and equipment.

In sum, it is unclear what benefit is provided from activities 9-12, the additions for this permit, with the goals listed below:

- Goal 9: "Correctly dispose and, where applicable, recycle mercury-containing equipment"

[23] Note this PMPP is marked in the Draft Permit as the newly revised PMPP, but it is actually the current permit term's PMPP. Draft Permit p. 74. This should be fixed in any final permit.

- Goal 10: “Reduce possibility of accidental spills and releases”
- Goal 11: “Review and restrict new purchase requests with mercury containing chemicals and equipment”
- Goal 12: “Safe and proper spill response for dealing with chemical spills”

2023 Permit Application, Attachment SMV-2, pdf p. 428.

'P Activities. Goals. Measures. and Schedules

Planned Activity	Goal	Measure of performance
bp will educate relevant refinery personnel about the mercury related purchasing policies, recycling practices, proper handling and disposal techniques, spill containment procedures, and other pollution prevention measures designed to reduce the potential for mercury to enter the wastewater treatment plant. bp will develop a computer-based training module or Virtual Training Administrator (VTA) or other training methods as appropriate for the training of personnel.	Education and and increased awareness.	Development and implementation of training to refinery staff.
bp will complete an assessment of identified process unit wastewater discharges from sources within the refinery that may contain mercury at detection levels utilizing process knowledge, previous analysis or with new analysis if warranted.	Complete the assessment	Submittal of completed assessment to IDEM.
bp will perform an assessment of the mercury content of the sediment in the main process sewer legs that are part of the current sewer cleaning program.	Complete the assessment	Submittal of completed assessment to IDEM.
bp will develop a prioritized schedule for the cleaning of the sewers incorporating any significant impacts found from the results of the sewer system characterization study. The sediment and mercury removal progress will be reported in the annual reports.	Develop the prioritized schedule for sewer cleaning.	Developmentof sewer cleaning schedule and submittal to IDEM.
bp will perform the mercury sewer cleaning as per the prioritized schedule.	Complete the sewer cleaning as per the prioritized schedule.	Completion of the sewer cleaning as per the prioritized schedule.
bp will complete the detailed inventory list of process chemicals or additives containing mercury, equipment containing mercury and process discharges that contain mercury.	Complete the inventory list.	Submittal of the inventory list to IDEM.
bp will develop a procedure utilizing a ranking method to identify the high-risk equipment and process chemicals for mercury exposure and alternatives that are feasible for their replacement.	Develop the risk ranking procedure.	Development of the risk ranking procedure and submission to IDEM
Mercury containing chemicals and equipment identified as high-risk for mercury exposure with feasible replacement alternatives will be replaced or substituted with chemicals or equipment containing less mercury or no mercury.	Implement a program of replacement/substitution.	Implementation of a progam for replacement/substitution.
Collection and disposal program.	Correctly dispose and, where applicable, recycle mercury-containing equipment.	Maintain a central collection area designated for types of mercury-containing equipment to be sent off-site for recycling or being properly disposed of in lab packs under RCRA requirements.
Good housekeeping practicies.	Reduce possiblity of accidental spills and releases.	Training of employees on good housekeeping practices that reduce the possibility of accidental spills and releases.
Review of purchasing policies and procedures.	Review and restrict new purchase requests with mercury containing chemicals and equipment.	Completion and documentation of the review of any approved chemical or equipment with mercury contents. Develop as needed any new language required to incorporate the objective of restricting the purchase and use of mercury containing chemicals and equipment, where there is a risk of contributing mercury to the facility's wastewater discharge.
Standard operating practices: spill response: chemicals and materials.	Safe and proper spill response for dealing with chemical spills.	Training of employees on proper and safe spill response for dealing with chemical spills

BP has had 13 years to take the steps necessary to come into compliance with the mercury limits needed to protect Lake Michigan aquatic life—and the people who eat Lake Michigan fish. BP instead avoided installing the treatment needed and relied upon an ineffective PMPP. Now BP is asking for even more time where it will not actually take the steps needed to meet Lake Michigan mercury limits. The SMV renewal does not meet the requirements of 327 IAC 5-3.5-7 because implementation of the PMPP in this permit term has not achieved progress toward the goal of reducing mercury from its discharge and neither will the revised PMPP.

B. BP's Proposed SMV Does Not Meet Federal Great Lakes Variance Requirements

IDEM and BP must also comply with federal Great Lakes variance requirements for renewal of the SMV. 327 IAC 5-3.5-7(a) requires that renewal must be "in accordance with IC 13-14-8-9," and IC-13-14-8-9 requires that applicants for Great Lake variances like the BP SMV meet the federal Great Lakes variance requirements:

> A variance from a water quality standard that is at least in part the basis of a National Pollutant Discharge Elimination System (NPDES) permit issued under this title must meet the conditions specified in:
>
> (1) 40 CFR 132, Appendix F, Procedure 2, in the case of waters within the Great Lakes system;

IC-13-14-8-9(a). In turn, 40 CFR 132, Appendix F, Procedure 2 establishes a number of requirements for permittees and their applications. 40 CFR 132, Appendix F, Procedure 2, C.

BP's SMV application is missing at least two of these key requirements. First, BP has not, as required under 40 CFR 132, Appendix F, Procedure 2, demonstrated that meeting the Lake Michigan mercury limits is not feasible for one of the following reasons.

> 1. The permittee demonstrates that attaining the mercury WQS is not feasible because:
>
> > a. Naturally occurring pollutant concentrations prevent the attainment of the WQS;
> >
> > b. Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the WQS, unless these conditions may be compensated for by the discharge of sufficient volume of effluent to enable WQS to be met without violating State or Tribal water conservation requirements;

> c. Human-caused conditions or sources of pollution prevent the attainment of the WQS and cannot be remedied, or would cause more environmental damage to correct than to leave in place;
>
> d. Dams, diversions or other types of hydrologic modifications preclude the attainment of the WQS, and it is not feasible to restore the waterbody to its original condition or to operate such modification in a way that would result in the attainment of the WQS;
>
> e. Physical conditions related to the natural features of the waterbody, such as the lack of a proper substrate cover, flow, depth, pools, riffles, and the like, unrelated to chemical water quality, preclude attainment of WQS; or
>
> f. Controls more stringent than those required by sections 301(b) and 306 of the CWA would result in substantial and widespread economic and social impact.

40 CFR 132, Appendix F, Procedure 2, C.1. BP's 2023 SMV application does not demonstrate infeasibility on any of these bases.

Compliance with the 3.2 ng/L daily maximum and 1.3 ng/L monthly average mercury limits is in fact feasible. Of the country's 32 permitted refineries with mercury limits, ten (approximately a third) had daily maximums in 2024 of 3.2 ng/L or less, and 8 had annual averages of mercury of 1.3 ng/L or less.[24] Without a specific, evidenced showing that compliance with the 3.2 ng/L daily maximum and 1.3 ng/L monthly average mercury limits is infeasible, 40 CFR 132, Appendix F, Procedure 2, C.1 bars approval of the SMV.

Numerous technologies can treat refinery effluent mercury to low levels. For instance, a pilot study conducted by Argonne National Labs and Purdue University at the BP Whiting Refinery in 2012 evaluated treatment technologies for mercury removal in WWT effluent and found that both ultrafiltration and reactive filtration can treat mercury to 1.3 ng/L or below, and that other technologies may also do so. Argonne National Laboratory and Purdue University Calumet Water Institute. Emerging Technologies and Approaches to Minimize Discharges into Lake Michigan. Purdue-Argonne Phase 2, Module 4 Report.[25] EPA's 2019 detailed refinery study also found that disk filtration and gravity granular media filtration technologies could effectively treat mercury to low levels. Attachment 3, EPA Refinery Study at 5-18. In addition, EPA recently established

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[24] https://echo.epa.gov/trends/loading-tool/water-pollution-search/results?s=cfe292fd81b209c6a2b528925ca287ff4f7e2e33 Note this report was run using the list of refineries in the EIP report, Oil's Unchecked Outfalls, not based on the 40 CFR Part 419 point source category in ECHO, because in ECHO, that point source category includes many facilities that are not actually refineries.

[25] https://publications.anl.gov/anlpubs/2012/04/72827.pdf

similarly low mercury levels to reflect the "best available economically achievable technology" at a similar industry (coal plants), after the Agency's research demonstrated that treating mercury is feasible using chemical precipitation plus low-hydraulic-residence-time biological reduction. 89 Fed. Reg. 40198, 40204 (May 9, 2024).

Second, BP has not, as required by the federal variance regulations, "[c]haracterize[d] the extent of any increased risk to human health and the environment associated with granting the variance compared with compliance with WQS absent the variance, such that the State or Tribe is able to conclude that any such increased risk is consistent with the protection of the public health, safety and welfare." 40 CFR 132, Appendix F, Procedure 2, C.2.

BP's SMV comes with a significant risk to the environment and human health, given that any excess mercury discharged to Lake Michigan will bioaccumulate in fish and other aquatic life and make those fish more dangerous for people to eat. Despite this, BP does not include *any* information regarding these risks in its 2023 application nor addressed this requirement.

In sum, approving the renewed SMV would violate both Indiana and federal law. BP has not made the progress required for renewal of the variance under 327 IAC 5-3.5-7, and its application lacks key information needed to obtain the variance under 40 CFR 132, Appendix F, Procedure 2. 327 IAC 5-3.5-7.

C. The Term of the Renewed SMV Cannot be Longer Than Five Years

If IDEM does renew the SMV, we note that the current Draft Permit term allowing BP to indefinitely rely upon the SMV until the permit is renewed, Draft Permit at 72, is contrary to Indiana and federal law. Instead, the maximum length the SMV can extend is 5 years from the effective date of this final permit.

As noted, IDEM's renewal of a SMV must be "in accordance with IC 13-14-8-9 ..." 327 IAC 5-3.5-7. IC 13-14-8-9 requires that "[a] variance may be granted under this section <u>for a period as follows: (1) For waters within the Great Lakes system, not more than five (5) years</u>." IC 13-14-8-9(d). This does not change if the permit is administratively continued. IC 13-14-8-9(e). To comply with IC 13-14-8-9(d), the final permit must include the 3.2 ng/L daily maximum and 1.3 ng/L monthly average mercury limits as effective limits 5 years after the permit's effective date.

VII. IDEM Cannot Ignore PFAS in the Draft Permit

Refineries are a notable source of PFAS due to current and past uses of PFAS-containing Class B firefighting foam at these sites. Attachment 4, EIP, *Oil's Unchecked Outfalls* at 24. It may also be used for other purposes on refinery sites: the California State Water Resources Control Board has also found that refineries use PFAS for preventing evaporation of petroleum products in tanks and improving the reliability of seals and hoses, among many other uses. *Id.*

The few oil refineries in the U.S. that have begun sampling for PFAS have seen the chemicals at high levels in their wastewater and stormwater runoff. In 2023, three refineries reported PFAS discharges through their DMR data (Marathon St. Paul Park Refinery, MN; Flint Hills Resources Pine Bend Refinery, MN; and Hunt Refining Company, AL).15F[26] The St. Paul Park Refinery reported levels of PFHxS between 20 and 56 parts per trillion (ppt), between twice and 5 times the 10 ppt PFHxS drinking water maximum contaminant limit (MCL).[27] Wastewater at the Suncor refinery in Commerce City, Colorado had a concentration of 290 ppt of PFOS in May 2020, more than 70 times higher than the drinking water MCL for PFOS. The levels were even higher in the wastewater at the Valero Benicia Refinery in Benicia, California, in October 2021, when sampling showed a concentration of 2,000 ppt PFOS.[28]

PFAS is likely onsite at the BP Whiting Refinery. While Indiana banned the use of PFAS foams for training in 2020, it remains legal to use them for emergency firefighting. IC 36-8-10.7-8. To the best of our knowledge, BP has not stated that foam will not be used in fire emergencies. Moreover, PFAS-containing foams are likely to have been used on the site for both training and fire emergencies for at least the last 30 years. *See, e.g.,* BP Whiting Refinery Fire-Fighting Training and Foam Analysis NPDES Permit No. IN0000108 at 1 (Mar. 20, 2020) (noting that "there was foam usage in training activities in 2019"). Such long-time use is likely to have contaminated the BP Whiting Refinery's groundwater: for instance, the high levels of PFAS at the Suncor refinery are due to high levels of PFAS in the groundwater from the past 40 years of using Class B foam. CO0001147 Fact Sheet at 25.[29] BP Whiting Refinery Outfall 005 wastestream also includes discharges of groundwater. Draft Permit at 1.

Despite the likely presence of PFAS in the Outfall 005 effluent, IDEM failed to ask BP to sample its Outfall 005 effluent or its stormwater for any PFAS as part of the application process. Then, when writing the Draft Permit, IDEM failed to evaluate whether numeric limits, practice-based limits, and/or monitoring for PFAS are needed in the permit. The only mention of PFAS in the Draft Permit is the same requirement for "a report on firefighting training" and alternative foams included in the previous permit. *Compare* Draft Permit at 9 *with* 2018 Final Permit 8. IDEM's failure to even consider whether limits and monitoring are needed for these dangerous "forever chemicals" violates the CWA's requirements that NPDES permits contain BAT TBELs for toxics like PFAS and water quality limits to protect the use of Lake Michigan as a drinking water source. 33 USC §§ 1311, 1312.

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[26] EPA, *Water Pollution Search Results*, https://echo.epa.gov/trends/loading-tool/water-pollution-search/results?s=e80aba8a4f2819ccef347a54f0caa4d19430888a

[27] PFAS MCLs, https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas. St. Paul Park Refinery DMRs, https://echo.epa.gov/effluent-charts#MN0000256.

[28] https://echo.epa.gov/trends/loading-tool/water-pollution-search/results?s=82d209752386b090b0c8f885ad7687c7a627bccd

[29] https://oitco.hylandcloud.com/cdphermpop/docpop/docpop.aspx?clienttype=activex&docid=22297176

Commenters ask IDEM to establish numeric limits for PFAS in this permit to protect Lake Michigan and the communities that rely upon Lake Michigan for their drinking water. We ask that IDEM base these limits on the federal PFAS drinking water standards (MCLs) for PFOA, PFOS, PFHxS, PFNA, and GenX.[30]

Compound	Final MCL (enforceable levels)
PFOA	4.0 parts per trillion (ppt)
PFOS	4.0 ppt
PFHxS	10 ppt
PFNA	10 ppt
HFPO-DA (GenX)	10 ppt

IDEM has the authority to establish case-by-case limits for all PFAS to protect the use of Lake Michigan as a drinking water source based on Indiana's narrative water quality standard prohibiting substances or combinations of substances in concentrations toxic or harmful to human health in the Great Lakes. 327 Ind. Admin. Code 2-1.5-8; *see also* Attachment 5, EPA, *Addressing PFAS Discharges in NPDES Permits and Through the Pretreatment Program and Monitoring Programs* at 4 (Dec. 5, 2022) (EPA PFAS Memo) (discussing use of narrative water quality standards for PFAS limits).[31] Further, it is appropriate to set such case-by-case limits based on the drinking water MCLs. EPA has endorsed the use of drinking water MCLs as human health criteria in some circumstances. Water Quality Criteria Methodology Revisions: Human Health, 65 Fed. Reg. 66,444 (Dec. 3, 2000); *see also Draft Water Quality Criteria Methodology Revisions: Human Health*, 63 Fed. Reg. 43,756 (Aug. 4, 1998) (the use of MCLs is acceptable for human health criteria in the absence of 304(a) criteria).

Like other permit limits based on human health water criteria, permit limits based on these MCLs could account for available assimilative capacity. However, the use of mixing zones for PFAS limits is inappropriate because PFAS are bioaccumulative nature of PFAS. See 327 IAC 5-2-11.4(b)(1)(D) (restricting the use of mixing zones for bioacculative pollutants of concern in the Great Lakes).

Given that these five PFAS are only a fraction of the harmful PFAS and that BP has not told IDEM that it does not store PFAS-containing foams on-site, Commenter also ask IDEM to include

[30] https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas
[31] https://www.epa.gov/system/files/documents/2022-12/NPDES_PFAS_State%20Memo_December_2022.pdf

practice-based requirements in the permit for foam cleanup and storage, like those described in EPA's 2022 PFAS memo. Attachment 5, EPA PFAS Memo at 3.

Finally, we ask for monthly PFAS monitoring at Outfalls 003, 004, and 005 of all 40 PFAS covered under Final EPA Method 1633 in order to better understand all of the PFAS discharges to Lake Michigan.[32]

VIII. Monitoring is Needed For All Known Pollutants Without Limits at All Outfalls

As discussed in Section II, the BP Whiting refinery discharges numerous harmful pollutants that lack TBELs, WQBELs, or even monitoring. Comprehensive monitoring of the BP Whiting refinery's effluent is needed in order for IDEM and the public to understand what pollutants the refinery is discharging into state and federal waters. This monitoring must also be at a frequency that will generate meaningful information given the effluent's variability. It is also required by EPA regulations, which state that NPDES permits are to include monitoring at "type, intervals, and frequency sufficient to yield data which are representative of the monitored activity." 40 CFR § 122.48(b); *see also* 40 CFR § 123.25 (applying the regulation to states).

The Draft Permit fails to meet this basic requirement. We ask for three categories of revisions to the permit's monitoring requirements: 1) restoration for the previous permit's arsenic, copper, lead, manganese, fluoride, strontium, vanadium, chloride, sulfate, TDS, nitrate-nitrite, and benzo(a)pyrene monitoring; and 2) inclusion of monthly monitoring for any other known pollutants without permit limits.

First, IDEM must restore the monitoring it removed from the previous permit. In the Draft Permit, IDEM removed all monitoring for arsenic, copper, lead, manganese, fluoride, strontium, vanadium, chloride, sulfate, TDS, nitrate-nitrite, and benzo(a)pyrene. While these pollutants are present in the discharge, IDEM justified their removal from the permit on the grounds that these pollutants did not have reasonable potential to cause or contribute to an exceedance of a water quality standard. Draft Permit at 23.

Removing monitoring on these grounds was incorrect for a number of reasons. These RP findings rely upon a likely-invalid mixing zone and will likely be very different when an RP is conducted without the mixing zone's 37.1 dilution. *Supra*, Section IV.

And importantly, WQBELs are not the only reason to monitor pollutants. IDEM is also required to establish TBELs for these pollutants and to include monitoring that will accurately characterize the discharge. If IDEM maintains the mixing zone, monitoring for many of these parameters (like

[32] https://www.epa.gov/cwa-methods/cwa-analytical-methods-and-polyfluorinated-alkyl-substances-pfas

nitrate-nitrite) may still be needed to ensure that the mixing zone protects existing uses like drinking water. That WQBELs are not the only reason for monitoring is reflected in IDEM's own regulations, which state that IDEM "may require monitoring for a pollutant or pollutant parameter even if it is determined that a WQBEL in the NPDES permit for that pollutant or pollutant parameter is not required." 327 Ind. Admin. Code 5-2-11.5(e).

Second, IDEM should include monthly monitoring at Outfall 005 for any known pollutants without permit limits. Should IDEM not include limits, pollutants requiring monitoring would include:

- 1,2,4-Trimethylbenzene
- 3,4-Benzofluoranthene (Benzo(b)fluoranthene) (PAH)
- Acenaphthene
- Acetone
- Aluminum
- Anthracene (PAH)
- benzene
- Benzo(a)anthracene (PAH)
- Benzo(ghi)perylene
- Benzo(k)fluoranthene
- Bromoform
- BTEX (benzene, toluene, ethylbenzene, xylene)
- Cadmium, PD
- Chrysene
- Fluoranthene (PAH)
- Fluorene (PAH)
- Indeno (1,2,3-cd) Pyrene
- Magnesium
- Methanol
- Molybdenum
- Naphthalene (PAH)
- Nickel
- Pyrene (PAH)
- Toluene
- Total Kjeldahl Nitrogen (TKN)
- Xylenes
- Zinc

IDEM should also not reduce monitoring for Oil and Grease at Outfall 005, as IDEM has proposed. Draft Fact Sheet at 38. A numeric WQBEL is needed for the pollutant. *Infra,* Section XI.B.

Finally, we ask that IDEM require monitoring at Outfalls 003 and 004 for the pollutants with limits or monitoring at Outfall 005 in order to better understand whether the pollutants present in the process water effluent are also present in the refinery's stormwater.

IX. IDEM Should Reject BP's Alternative Thermal Effluent Limitations 316(a) Request

Surface water quality criteria in Lake Michigan require maintaining normal daily and seasonal temperature fluctuations. The criteria also require that at a distance of a 1,000 foot arc from a discharge point, the receiving water temperature must not be more than 3ºF above the existing natural water temperature and not "raise the maximum temperature in the receiving water above those listed in the following table:"

Table 6, Maximum Temperatures	
Month	**°F(°C)**
January	45 (7)
February	45 (7)
March	45 (7)
April	55 (13)
May	60 (16)
June	70 (21)
July	80 (27)
August	80 (27)
September	80 (27)
October	65 (18)
November	60 (16)
December	50 (10)

327 IAC 2-1.5-8(c)(4)(D)(iii) and (iv). The discharge from BP Whiting's Outfall 002 greatly exceeds these criteria as shown by the average and daily maximum temperature in ºC in the table below.[33] Additionally, BP Whiting's 2023 316(a) Demonstration study and report by Ramboll ("316(a) Demonstration"), states that half of the modeled scenarios are "predicted to exceed 3ºF (1.7ºC) above ambient temperatures" along the 1,000 ft. arc and, "confirm[s] that the Outfall 002 discharge cannot meet Water Quality Standards."[34]

33 Ramboll, 316(a) Demonstration Report and Alternative Thermal Effluent Limit Request for bp Whiting (Ramboll, 316(a) Demonstration Report"), dated January 2023 (submitted March 20, 2023), p.7, available at IDEM Virtual File Cabinet.

34 Ramboll 316(a) Demonstration Report, p. 20.

Table 2. Outfall 002 Flow and Temperature Data (2013-2021)

	Count	Avg. Flow	Daily Max.	Avg. In Temp	Avg. Out Temp	Daily Max. Temp	Thermal Load
Month	#	MGD	MGD	°C	°C	°C	GBTU/hr
January	8	59.6	69.2	1.3	21.95	25.6	0.770
February	8	60.2	67.9	1.1	21.68	25.0	0.773
March	8	61.6	70.6	3.8	24.28	28.0	0.789
April	8	64.6 (78.8)	78.4 (87.7)	7.9	27.56 (35)	32.0 (33)	0.791
May	8	68.3	88.7	12.1	31.12	37.0	0.809
June	8	72.6	87.0	17.3	36.24	41.0	0.859
July	8	73.9 (78.8)	94.3 (87.7)	20.5	38.87 (54)	42.2 (50)	0.850
August	8	74.7	99.4	22.3	39.95	43.8	0.823
September	8	72.8	118.8	19.3	36.61	40.4	0.789
October	8	64.1	109.8	15.0	31.87	38.5	0.684
November	9	62.3	75.1	8.4	26.83	32.0	0.718
December	8	60.2	70.4	3.3	23.77	28.0	0.769

Abbreviations: MGD = million gallons per day GBTU/hr = billion British thermal units per hour
Values in parentheses are those used in EFDC modeling based on thermal load calculations.

Rather than impose limits that comport with water quality criteria, the Draft Permit relies on alternative thermal effluent limitations (ATELs). As explained below, these ATELs fail to comply with requirements and must be substantially modified.

A. Alternative Thermal Effluent Limitations Standards

The Clean Water Act allows for ATELs provided "such discharge…will assure the protection and propagation of a balanced indigenous population of shellfish, fish and wildlife in and on that body of water." CWA § 316(a); 40 CFR § 125.70. In applying for an ATEL, the discharger must describe the ATEL, the proposed demonstration methodology, and the types of data and studies that will be submitted. 40 CFR §§ 125.72(a), (b); 327 IAC 5-7-3(a), (b). The discharger must "consider any information or guidance published by EPA to assist in making" its demonstration.[35] 40 CFR § 125.72(e); 327 IAC 5-7-3(e). IDEM also requires dischargers to consider its draft guidance.[36]

[35] Federal Guidance includes Draft Interagency 316(a) Technical Guidance Manual and Guide for Thermal Effects Sections of Nuclear Facilities Environmental Impact Statements. May 1, 1977. U.S. EPA, Office of Water Enforcement, Permits Division, Industrial Permits Branch, Washington D.C., available at: https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=9100POG8.TXT.

[36] *See* Fact Sheet, p. 46-47. *See also* IDEM, Guidance for Conducting a Demonstration as a Requirement of a 316(a) Alternative Thermal Effluent Limitation Request ("IDEM 316(a) Guidance"), March 2015, available at: https://www.in.gov/idem/cleanwater/resources/thermal-effluent-limitations/.

Existing dischargers like BP Whiting must show either that "no appreciable harm has resulted" from thermal discharges or "[t]hat despite the occurrence of such previous harm, the desired alternative effluent limitations…will nevertheless assure the protection of a balanced, indigenous community." 40 CFR § 125.73(c)(1); 327 IAC 5-7-4(c)(1). And when a discharger's permit expires, the discharger "should be prepared to support the continuation of the variance with studies based on the discharger's actual operation experience." 40 CFR § 125.72(f).

Under EPA and IDEM guidance, a facility can conduct three types of demonstrations to prove that there has either been "no [previous] appreciable harm" or that future discharges "will nevertheless assure the protection of a balanced indigenous community." IDEM allows Type III Demonstrations for discharge sites determined to have low potential impact for all biota categories or when a custom study is necessary. IDEM 316(a) Guidance, p. 42.[37] Low potential impact demonstrations require "less extensive studies than other dischargers [but] consider information from each biotic category" while a custom demonstration "should reflect a degree of detail and proof comparable to a Type I or II Demonstration." *Id.* Additionally, IDEM's guidance requires existing dischargers "to conduct a new Type I Demonstration if they have not completed a Type I Demonstration within the past 10 years." *Id.* at 5.

BP relies on a Type III Demonstration but does not satisfy the test. Also, BP is required to, but did not, perform a Type I Demonstration.

B. BP Fails to Make a Proper Type III Demonstration

Successful Type III demonstrations must meet the criteria in either Table 7 or Table 8 below:

Table 7
Criteria for Successful Type III (or I) Demonstrations (all of the following must be true)
The current local biological community and the predominant local biological community that existed when the historical data were collected are similar in makeup and in regards to response to thermal influences.
The current operating conditions at the permitted facility are similar to those that were evaluated when the historical data were collected.
Changes in the physical characteristics of the waterbody or changes in ambient water quality have not altered the balanced, indigenous community that existed, or that the proposed ATEL will adequately protect and assure no appreciable harm to the species now present (or that should be present) due to any changes in physical characteristics or ambient water quality.

[37] https://www.in.gov/idem/cleanwater/files/thermal_effluent_demo_guidance.pdf

Table 7
Criteria for Successful Type III (or I) Demonstrations (all of the following must be true)
There is no convincing evidence that there has been damage to the balanced, indigenous community, or community components, resulting in such phenomena as those identified in the definition of appreciable harm.
The receiving waters are not of such quality that in the absence of the proposed thermal discharge excessive growths of nuisance organisms would take place.
A zone of passage has not been impaired to the extent that it does not provide for the normal movement of populations of dominant species of fish, and economically (commercial or recreational) important species of fish, shellfish, and wildlife.
There is no evidence of adverse impact on threatened, rare or endangered species.
There has been no destruction of unique or rare habitat.

Table 8
Criteria for Successful Type III (or II) Demonstrations (all of the following must be true)
There is no convincing evidence that there will be damage to the balanced, indigenous community, or community components, resulting in such phenomena as those identified in the definition of appreciable harm.
Receiving water temperatures outside any (IDEM established or approved) mixing zone will not be in excess of the upper temperature limits for survival, growth, and reproduction, as applicable, of any RIS occurring in the receiving water.
The receiving waters are not of such quality that in the absence of the proposed thermal discharge excessive growths of nuisance organisms would take place.
A zone of passage will not be impaired to the extent that it will not provide for the normal movement of populations of RIS, dominant species of fish, and economically (commercial or recreational) important species of fish, shellfish, and wildlife.
There will be no adverse impact on threatened, rare or endangered species.
There will be no destruction of unique or rare habitat without a detailed and convincing justification of why the destruction should not constitute a basis for denial.

IDEM 316(a) Guidance, p. 47-48. BP Whiting has requested, and IDEM is proposing to retain, the ATEL from the current permit at Outfall 002 allowing heat discharge of 1.5 billion BTU/hour maximum daily average and 1.2 billion BTU/hour maximum monthly average based on a Type III Demonstration (the 316(a) Demonstration by Ramboll). But this demonstration fails to identify which of the above criteria tables it is using. Moreover, IDEM does not expressly find that the 316(a) Demonstration established that ATEL discharges have not resulted prior "appreciable harm" or if there has been harm, the ATEL "will require effluent limitations more stringent than necessary

to assure the protection and propagation of a balanced indigenous population of shellfish, fish and wildlife in and on that body of water." 40 CFR § 125.70. IDEM states only that the 316(a) Demonstration "**attempts** to show that no appreciable harm has occurred from the thermal discharge at BP Whiting Refinery." Fact Sheet, p. 77 (emphasis added). IDEM acknowledges that "burden of proof is on the permittee to demonstrate that it is eligible to receive an alternative effluent limit under 316(a)." Fact Sheet, p. 46.

The 316(a) Demonstration otherwise fails to carry that "burden of proof" and satisfy the criteria in either Table 7 or 8 above.

- IDEM recognizes that the 316(a) Demonstration "included the Outfall 005 temperature and flow in their model of Outfall 002 as if Outfall 005 discharged at the same location as Outfall 002. IDEM is uncertain why this was done given that the two outfalls are 3,300 feet apart." Fact Sheet, p. 48. This calls into question all modeled results and the 316(a) Demonstration's ability to meet any criteria.
    - Additionally, while the permit only mentions an ATEL for Outfall 002, with the intermixing of Outfall 005 data in the model and report, it is unclear if Outfall 005 also requires an ATEL.
- The 316(a) Demonstration "relies on the calibration and validation done for" a model used in a 2011 study (the EFDC model used in the AECOM 2011 Study. Fact Sheet, p. 48. IDEM repeatedly noted, however, that the models are incomparable, let alone interchangeable ("[B]ecause of the significant differences between the 2011 and 2023 thermal modeling inputs, the two models cannot be directly compared.") Fact Sheet, p. 49. *See also id.* at 50, 53.
    - IDEM even found one of the 2023 study's primary conclusions – that the "area exposed to heated effluents above water quality standards is substantially reduced from the 2011 Study due to the reduction in flow and thermal load discharged at the facility" – to be unsupported "due to the significant differences…between the 2011 and 2023 studies." Fact Sheet, p. 53.
- The 316(a) Demonstration did not include either Lake Sturgeon or Round Goby as representative important species (RIS), despite IDEM's request when it approved the study plan, and despite BP's email stating it would include Lake Sturgeon. Fact Sheet, p. 54. The Lake Sturgeon is listed as a critically imperiled State Endangered species in Lake County where BP Whiting oil refinery is located and the criteria in both Table 7 and 8 above require that there is no "adverse impact on threatened, rare or endangered species."
- The 316(a) Demonstration "results suggest that alewife, Chinook salmon, and possibly yellow perch, could be exposed to their [upper incipient lethal temperature] at 1,000-ft arc from Outfall 002 during summer." Fact Sheet, p. 54. This would violate the criteria in Table 8 that "[r]eceiving water temperatures outside any (IDEM established or approved)

mixing zone will not be in excess of the upper temperature limits for survival, growth, and reproduction, as applicable, of any RIS occurring in the receiving water."

- The 316(a) Demonstration fails to consider all biotic categories, and did not include any recent field studies of the biota or the effluent plume. It only considered the impact on 6 species of fish and ignores the remaining major biotic categories including phytoplankton, zooplankton and meroplankton, habitat formers, shellfish/ macroinvertebrates, and other vertebrate wildlife such as ducks, geese, and muskrat.
    - This prevents evaluation against criteria in both Table 7 and 8 requiring: (a) for that "[t]here [be] no convincing evidence that there has been damage to the balanced, indigenous community, or community components, resulting in such phenomena as those identified in the definition of appreciable harm"; and (b) "[a] zone of passage will not be impaired to the extent that it will not provide for the normal movement of populations of RIS, dominant species of fish, and economically (commercial or recreational) important species of fish, shellfish, and wildlife."
- The 316(a) Demonstration application failed to include required documentation and information, including that the request for thermal zone must "specify the temperature within and at the edge of the Zone of Initial Dilution (ZID), the temperature at the edge of the chronic mixing zone (the point at which the temperature stabilizes) and the proposed sizes of the mixing zones as applicable," (IDEM 316(a) Guidance, p. O2) which requires more detail than merely noting an oval mixing zone with a maximum size of 11.8 acres. *Id.*
- Other defects including:
    - The 316(a) Demonstration relied only on historical data,[38] limited literature reviews, and inaccurate modeling.
    - The 316(a) Demonstration did not consider year-round impacts – instead it was limited to spring and summer temperature impacts only.
    - The model used a daily maximum temperature from Outfall 005 discharge (103.8ºF/39.9ºC) which, besides being the wrong outfall, was insufficient because Outfall 002 has had higher temperature discharges on multiple occasions (107.6ºF/42ºC).
    - The model figures in the 316(a) Demonstration are inadequate because the isotherms are too small and blurry to make out, none of the figures indicate the

38 Additionally, neither the 2023 Demonstration or the Fact Sheet explain why the flow and temperature data used for the study only goes through September 2020.

1,000 ft. arc, and the figures are at differing scales making them hard to compare.[39]

C. IDEM Should Have Required BP to Complete a Type I Demonstration

As noted above, IDEM's 2015 Guidance requires existing dischargers "to conduct a new Type I Demonstration if they have not completed a Type I Demonstration within the past 10 years." IDEM 316(a) Guidance, p. 5. BP, however, has never conducted a Type I Demonstration, even though it has had an ATEL for more than 10 years. And IDEM does not even mention its guidance requirement for a Type I Demonstration in any permit-related documents. The closest IDEM comes is in the Fact Sheet which states that a "316(a) demonstration is only included when it has been 10 years or more since a facility has conducted one or if there is a change in operations that will affect temperatures leaving the facility." Fact Sheet, p. 57. But IDEM's 2015 Guidance does not require some kind of 316(a) demonstration every 10 years; it specifically requires a Type I Demonstration on that schedule. IDEM should require BP to conduct a Type I Demonstration before issuing a final permit.

X. IDEM Should Ensure Compliance with 316(b) Requirements

Section 316(b) of the CWA requires that the location, design, construction, and capacity of cooling water intake structures (CWIS) associated with NPDES-permitted facilities reflect the best technology available (BTA) for minimizing adverse environmental impact. 33 U.S.C. § 1326(b). Specifically, because BP Whiting has a design intake flow (DIF) greater than 2 MGD, the applicable regulation (40 CFR § 125.94(a)(1)) requires the facility to meet the BTA standards for fish or shellfish impingement mortality under 40 CFR 125.94(c), which provides seven alternatives for existing facilities to meet BTA standards. The BTA method relevant to this permit modification requires a maximum through-screen actual velocity of 0.5 feet per second (fps). 40 CFR § 125.94(c)(3). Under this method, the "maximum velocity must be achieved under all conditions." 40 CFR § 125.94(c)(3).

In order to assure compliance with an actual intake velocity of less than 0.5 fps, BP Whiting's 2019 permit ("Current Permit") required BP Whiting to do two things: 1) either verify the actual intake velocity of Intake 1911 by conducting a study to determine feasibility of installing flow meters or physically modify the intake; and 2) submit a pump operation plan by March 1, 2020 and record pump operations to determine compliance.[40]

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39 *See* Ramboll 316(a) Demonstration Report, Figures 3, 4, 5 on pp. 18-20 as well as those in Appendix 3: Figures 3-2, 3-4, 3-6, 3-8, 3-10, 3-12, 3-14, 3-16 on pp. 1-8.

40 2019 BP Whiting NPDES Permit, Part IV.B.3-5, p. 67.

BP Whiting opted to physically modify Intake 1911 to reduce the intake velocity to below 0.5 fps. While BP Whiting insists this will result in a maximum intake velocity of 0.39 fps,[41] its models rely on estimated intake flows because "[m]easured daily intake flow data were not available because no direct flow metering devices are present at the intakes."[42] Even now, intake flow calculations are still only estimates as IDEM has not required BP Whiting to install flow meters at the intake tunnels or water stations.[43] IDEM admits that it usually requires facilities to get flow meters to measure intake velocity but is not requiring them for BP Whiting.

> "Typically, IDEM has required facilities with the maximum actual through-screen intake velocity of 0.5 fps impingement mortality BTA to install an intake flow meter to obtain accurate flow data to be used in the calculation of the maximum velocity…[and] typically requires the calculation of the instantaneous maximum or hourly maximum velocity to determine compliance with the velocity limit. However, based on the information provided by the permittee, IDEM is not proposing to require the installation of flow meters in this permit renewal."[44]

Instead, they "will reevaluate the need for intake flow meters in the next permit renewal."[45] IDEM needs to explain why they are not requiring BP Whiting to install these simple and inexpensive tools to ensure the permit complies with the Clean Water Act and is protective of fish against entrainment and impingement.

Per the Current Permit, BP Whiting was required to submit a Pump Operations Plan by March 2020 and then begin recording pump operations. BP Whiting seemingly did submit a document titled Pump Operations Plan in February 2020.[46] However, it is not a pump operations plan, rather it is a hydraulic modeling report to back up BP Whiting's assertion that it has "no need to maintain records of pump(s) operation beginning in March 2020."[47] IDEM disagreed, however, and reaffirmed in November 2021 that BP Whiting "shall submit the records of pump operations that were required to be maintained at the facility beginning March 2020 by Part IV.B.4. of the Permit."[48] BP Whiting seemingly ignored the Current Permit and IDEM's direction and even state

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[41] 2023 BP Whiting NPDES Application, pdf p. 186.
[42] BP Whiting NPDES Draft Permit, pdf p.144.
[43] The Draft Permit provides for two calculation methods: 1) backwards calculated from metered outfall discharges, estimated water losses, and estimated stormwater contributions and 2) calculated using pump amperage data and pump curves. This estimated intake flow is then used with the intake open area to calculate an estimated through-screen velocity. *See* BP Whiting Draft Permit, pp. 10-11.
[44] Fact Sheet, p. 74.
[45] Fact Sheet, p. 74.
[46] *See* 2023 BP Whiting NPDES Application, pdf p. 251. Commenters were unable to find a stand-alone version of the report in IDEM's Virtual File Cabinet.
[47] 2023 BP Whiting NPDES Application, pdf p. 256.
[48] 2023 BP Whiting NPDES Application, pdf p. 182. *See also* IDEM Response Letter to BP Request for Reduced CWIS Submission Requirements, date November 8, 2021, available at IDEM Virtual File Cabinet.

in its permit application that "[p]ump operations at the Whiting Refinery intakes are not recorded...the Whiting Refinery had no need to maintain records of pump operation."[49]

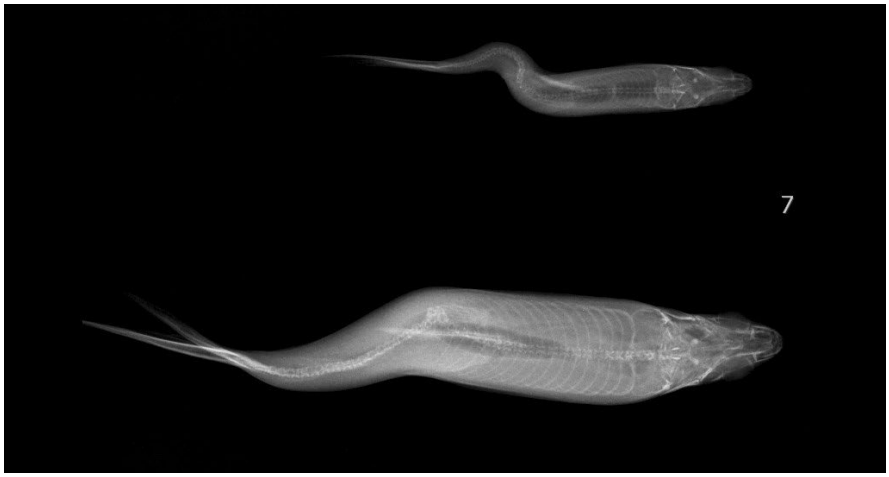
Since March 2020 there is no record that BP Whiting has ever submitted an actual pump operation plan or records of its pump operations in accordance with IDEM direction and the terms of its Current Permit. However, rather than hold BP Whiting to its obligations under its Current Permit, IDEM has simply removed those requirements from the Draft Permit without mention, explanation, or public notice.[50] IDEM needs to clarify why BP Whiting has been allowed to violate its Current Permit for the last five years, and why it is seemingly being rewarded for doing so. Additionally, IDEM needs to explain how the permit will ensure compliance with the through-screen velocity limit without the pump operation plan, without flow meters, and when "IDEM has not evaluated the information submitted by the permittee..."[51]

XI. Other Draft Permit Revisions Needed

A. IDEM Should Shorten the Selenium Compliance Schedule

Selenium is a significant threat to aquatic life. Attachment 4, EIP, *Oil's Unchecked Outfalls* at 15. Selenium bioaccumulates in the aquatic food chain and chronic exposure to the pollutant in fish and aquatic invertebrates can cause reproductive impairments (e.g., larval deformity or mortality).[52] Selenium causes mutations and reproductive impairment in fish and amphibians, sometimes decimating populations. The spines of these fish have been deformed by selenium, for example.[53]

[49] 2023 BP Whiting NPDES application pdf p. 183.
[50] Neither the Draft Permit nor the Permit Modification dated December 15, 2020 mention or include this as a change to the Current Permit.
[51] Fact Sheet, p. 66.
[52] https://www.epa.gov/wqc/aquatic-life-criterion-selenium#:~:text=and%20irrigated%20agriculture.-,How%20does%20Selenium%20Affect%20Aquatic%20Life?,containing%20excessive%20levels%20of%20selenium.
[53] https://www.fisheries.noaa.gov/feature-story/spinal-deformities-sacramento-san-joaquin-delta-fish-linked-toxic-mineral-selenium-new



Because these pollutants persist in the environment, even minute discharges can cause harm to aquatic life. Selenium can cause reproductive harm or disrupt aquatic ecosystems at freshwater concentrations as small as 1.5 ug/L.[54] To protect Lake Michigan aquatic life, the Draft Permit includes final daily maximum limits of 19 lbs/day and 110 µg/L, and monthly averages of 8 lbs. per day and 47 µg/l. Draft Permit at 3. Commenters support the inclusion of these limits. However, the Draft Permit also provides BP with five years to meet all of these limits and protect Lake Michigan aquatic life at Outfall 005. Draft Permit at 3. Commenters do not support this five-year compliance schedule.

Under federal regulations that IDEM is required to follow as an authorized state, IDEM must demonstrate that any compliance schedule is "appropriate," and "require[s] compliance *as soon as possible*." 40 C.F.R. §§ 122.47(a), 122.47(a)(1) (emphasis added); *see also* James Hanlan, EPA, *Memorandum, Compliance Schedules for Water Quality-Based Effluent Limitations in NPDES Permits* (May 10, 2007).[55]

The Draft Permit's five-year compliance schedule for all four of the selenium limits is not "as soon as possible." We ask that IDEM shorten the compliance schedule considerably for the monthly average limits, eliminate the compliance schedule completely for the daily maximum concentration limits, and shorten the compliance schedule for the daily maximum mass limits to one year.

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[54] That is the equivalent of about 1.5 parts per billion. U.S. Environmental Protection Agency, "Aquatic Life Ambient Water Quality Criterion for Selenium in Freshwater 2016 – Fact Sheet," June 2016. Link: https://www.epa.gov/sites/default/files/2016-06/documents/se_2016_fact_sheet_final.pdf

[55] https://www.epa.gov/npdes/compliance-schedules-water-quality-based-effluent-limitations-npdes-permits

First, IDEM never explains why five years is as soon as possible for installation of the needed treatment. Draft Fact Sheet at 41. Nor does the Gantt chart on the last page of the Draft Fact Sheet, which lays out BP's plan for piloting, engineering, and building selenium treatment, explain why it will take BP five years to take these steps. *See* Draft Fact Sheet at Attachment 2 (Gantt Chart for Selenium Schedule of Compliance). BP also does not explain why it would need to conduct a pilot or spend five years constructing treatment when there are existing technologies that effectively treat selenium in refinery wastewater to under the Draft Permit's limits of 110 ug/L and 47 ug/L. The 2019 EPA refinery study noted that, for instance the Sorbster™ media, which uses uses proprietary chemistries to covalently bond metals and remove them from aqueous streams, was able to remove up to 80% of selenium from treated refinery effluent regardless of upstream selenium treatment technology, resulting in discharges under 20 ug/L. Attachment 3, 2019 EPA Refinery Study at 5-15. Other technologies, like Fluidized Bed Reactors, can also effectively treat selenium to low levels.[56]

Second, while BP's monthly average numbers are not yet close to the final limits, BP is very close to meeting the daily maximums now. It has only exceeded the final daily quantity limit of 20 lbs. per day once this permit term. BP has only reached or exceeded the final daily concentration limit of 110 ug/L (.11 mg/L) 6 times out of 23 this permit, meeting the limit 76% of the time. Attachment 1, BP Whiting DMR Data.

Table 9, Daily Max of Selenium Quantity in Current Permit Term

Month ends	DMR Sample	Unit
12/31/2024	2	lb/d
9/30/2024	18	lb/d
6/30/2024	10	lb/d
3/31/2024	7	lb/d
12/31/2023	10	lb/d
9/30/2023	16	lb/d
6/30/2023	13	lb/d
3/31/2023	19	lb/d
12/31/2022	12	lb/d
9/30/2022	19	lb/d

[56] Su Yan, Ka Yu Cheng, Maneesha P. Ginige, Guanyu Zheng, Lixiang Zhou, Anna H. Kaksonen, *High-rate microbial selenate reduction in an up-flow anaerobic fluidized bed reactor (FBR),* Science of The Total Environment, Volume 749, 2020, 142359, ISSN 0048-9697, https://www.sciencedirect.com/science/article/pii/S0048969720358885.

Table 9, Daily Max of Selenium Quantity in Current Permit Term		
Month ends	DMR Sample	Unit
6/30/2022	10	lb/d
3/31/2022	13	lb/d
12/31/2021	5	lb/d
9/30/2021	13	lb/d
6/30/2021	20	lb/d
3/31/2021	10	lb/d
12/31/2020	16	lb/d
9/30/2020	15	lb/d
6/30/2020	14	lb/d
3/31/2020	14	lb/d
12/31/2019	17	lb/d
9/30/2019	16	lb/d
6/30/2019	12	lb/d

Table 10, Daily Max of Selenium Quantity in Current Permit Term		
Month ends	DMR Sample	Unit
12/31/2024	0.013	mg/L
9/30/2024	0.12	mg/L
6/30/2024	0.074	mg/L
3/31/2024	0.056	mg/L
12/31/2023	0.073	mg/L
9/30/2023	0.1	mg/L
6/30/2023	0.085	mg/L
3/31/2023	0.13	mg/L
12/31/2022	0.085	mg/L
9/30/2022	0.12	mg/L
6/30/2022	0.079	mg/L
3/31/2022	0.1	mg/L
12/31/2021	0.039	mg/L
9/30/2021	0.081	mg/L
6/30/2021	0.11	mg/L
3/31/2021	0.073	mg/L

Table 10, Daily Max of Selenium Quantity in Current Permit Term		
Month ends	DMR Sample	Unit
12/31/2020	0.12	mg/L
9/30/2020	0.11	mg/L
6/30/2020	0.088	mg/L
3/31/2020	0.1	mg/L
12/31/2019	0.11	mg/L
9/30/2019	0.097	mg/L
6/30/2019	0.08	mg/L

BP could likely begin meeting the daily quantity limit as soon as the permit is effective, meaning no compliance schedule is needed, and could meet the daily concentration limit shortly thereafter, meaning IDEM should include a one-year compliance schedule at most. There is no justification for a five-year compliance schedule to meet these daily maximum limits.

Finally, if IDEM does include a compliance schedule for selenium in the final permit, it must revise it to meet federal requirements.

Any compliance schedule contained in an NPDES permit must be an "**enforceable sequence of actions or operations** leading to compliance with a [WQBEL]" CWA § 502(17); *see also* 40 C.F.R. § 122.2 (definition of schedule of compliance). Here, IDEM has allowed BP to create its own plan for addressing selenium on its own timeline:

> The permittee shall submit a written progress report … twelve (12) months from the effective date of this permit. The progress report shall include a description of the method(s) selected for meeting the newly imposed limitation for selenium, in addition to any other relevant information. The progress report shall also include a specific time line specifying when each of the steps will be taken.

Draft Permit at 47. This is not an enforceable sequence of actions that will lead to compliance with the selenium limits, as federal regulations require. Rather, the Draft Permit's compliance schedule is a recipe for continued delay and inaction. If IDEM includes a compliance schedule for selenium in the final permit, we ask that the schedule include specific, enforceable actions, like preparing an engineering plan for selenium treatment and constructing it.

Commenters also ask that, if DEM includes a compliance schedule for selenium in the final permit, IDEM also include an interim selenium limit to protect Lake Michigan aquatic life. An appropriate interim limits could be the maximum DMR value sampled in the last permit term, which are listed below.

Table 11, Maximum Selenium Samples in Permit Term		
Monthly Average Quantity	17.9	lbs/day
Daily Maximum Quantity	20	lbs/day
Monthly Average Concentration	0.13	mg/L
Daily Maximum Concentration	0.13	mg/L

Attachment 1, BP Whiting DMR Data. These interim limits, which BP has already demonstrated that it can meet, will provide at least some protection to Lake Michigan's aquatic life during the upcoming permit term.

B. IDEM Should Establish a Numeric WQBEL for Oil and Grease at Outfall 005

Indiana's minimum surface water quality criteria provide that all surface waters "within the Great Lakes system, including waters within a mixing zone, must be free from substances, materials, floating debris, oil, or scum … that … Produce … visible oil sheen; or other conditions; to an extent that creates a nuisance." 327 Ind. Admin. Code 2-1.5-8. . Petroleum refineries have the potential to discharge oil in quantities that could harm aquatic life, harm birds, sicken swimmers, and impair the use of the receiving water as a drinking water source.

The Draft Permit includes a narrative condition based on Indiana's Great Lakes water quality criteria which states that "[a]t all times the discharge from any and all point sources specified within this permit shall not cause receiving waters: 1. including waters within the mixing zone, to contain substances, materials, floating debris, oil, scum … that do any of the following: … produce … visible oil sheen … or other conditions in such degree as to create a nuisance." Draft Permit at 12.

An oil and grease limit that is easily enforced and protective of water quality is critical at BP Whiting. Unfortunately, the limits for oil and grease in the petroleum refinery ELGs are outrageously high. For instance, based on the ELGs, the Draft Permit includes a monthly average limit of 1,368 lbs. of oil and grease per day and a daily maximum of 2,600 lbs./day. 40 CFR § 419.24(a). These ELGs do not protect Lake Michigan birds, fish, or swimmers from being covered in oil and grease. Moreover, the Draft Permit's narrative prohibition on producing a "visible sheen" is difficult to enforce and monitor.

We ask that IDEM establish a numeric, concentration-based limit to implement this "visible oil sheen" narrative water quality standard and protect Lake Michigan birds, fish, and swimmers.

Based on other states, we believe 10 mg/L would be appropriate. *See* 5 CCR 1002-62, Reg. 62.5(1)(f) (Colorado water quality regulations that use 10 mg/L as a numeric proxy for "visible oil sheen").[57]

C. IDEM Should Require Receiving Water Monitoring and Flow Limits if IDEM Continues to Use a Mixing Zone

If IDEM *does* continue to rely upon a mixing zone for its reasonable potential analysis, IDEM should take the following steps:

1. Include both effluent and receiving water monitoring in the permit for pollutants important to the protection of existing uses to ensure those uses are protected.

   Monitoring could include, for instance, nitrate-nitrite and benzene to determine whether the drinking water use has been impaired and zinc and other metals to assess the aquatic life use.

2. Include a 21.4 MGD monthly average flow limit at Outfall 005.

   IDEM approved the 37.1 dilution factor in 2006 based on an effluent flow of 21.4 MGD from Outfall 001, which discharged the same effluent as Outfall 005 before installation of the multiport diffuser in 2010. Draft Fact Sheet, Attachment 1 at 2. However, neither the previous permit nor the Draft Permit include a flow limit to ensure that BP does not discharge more than 21.4 MGD. Such a flow limit is needed. While BP did not discharge an average of more than 21. MGD per month during the current permit term, it frequently discharged much more than 21.4 MGD in one day:

Table 12, Outfall 005 Maximum Daily Flows		
Last day of Month	DMR Value	Unit
8/31/2024	22.9	MGD
7/31/2024	24.8	MGD
4/30/2024	21.8	MGD
8/31/2023	23.6	MGD
7/31/2023	24.6	MGD
4/30/2023	22.1	MGD

[57] https://www.sos.state.co.us/CCR/DisplayRule.do?action=ruleinfo&ruleId=2378&deptID=16&agencyID=132&deptName=1000%20Public%20Health%20and%20Environment&agencyName=1002%A0Water%20Quality%20Control%20Commission&seriesNum=5%20CCR%201002-62

Table 12, Outfall 005 Maximum Daily Flows		
Last day of Month	DMR Value	Unit
9/30/2022	23.7	MGD
10/31/2021	24.6	MGD
8/31/2021	23.2	MGD
7/31/2021	23.3	MGD
6/30/2021	28.1	MGD
5/31/2021	24.3	MGD
5/31/2020	23.6	MGD
10/31/2019	22.1	MGD
9/30/2019	25.6	MGD
7/31/2019	24.9	MGD
6/30/2019	22.1	MGD
5/31/2019	22.6	MGD

Given the variability of BP Whiting's flows, a flow limit is needed to ensure that the refinery does not exceed the 21.4 MGD average that forms the basis for IDEM's approval of the current mixing zone.

D. IDEM Should Fix Draft Permit Errors

Commenters ask that IDEM fix or explain the following, which appear to be errors:

- Outfall 005, Footnote [3] states "The permittee shall measure and report the identified metal as total recoverable metal." Draft Permit, p.3. This footnote is about pH, which would not determine total recoverable metal.
- Outfall 002 Footnote [5] states temperature will be monitored on a continuous basis except for periods of downtime, maintenance or repair. Draft Permit, p. 7. IDEM should provide a time limit for reinstating temperature monitoring.
- Outfall 002 Footnote [7] is missing a term at the end of the second sentence as it states "Compliance with the daily maximum limit will be demonstrated if the observed effluent concentrations are less than the." Draft Permit, p. 7.

XII. SUMMARY AND CONCLUSION

In summary, Commenters request IDEM take the following actions with regard to the Draft Permit:

Table 13, Summary Table	
Change Requested	**Discussion in Comments**
Consider and Evaluate Potential TBELs, WQBELs, and Monitoring for Outfall 005 Pollutants listed in Tables 2 and 3. Establish Tier II values when needed.	Section II
Include Case-by-case BAT TBELs for known toxic and nonconventional pollutants	Section III
Do not rely upon the BP mixing study to determine reasonable potential and WQBELs. Conduct a reasonable potential analysis for all known pollutants without the mixing zone or 37.1 dilution	Section IV
Conduct a reasonable potential analysis for the pollutants in Outfalls 003 and 004	Section V
Do not approve the SMV renewal. Require that BP Whiting meet the Lake Michigan mercury limits.	Section VI
Add numeric limits for PFOA, PFOS, PFHxS, PFNA, and HFPO-DA (GenX) at Outfall 005 based on the drinking water MCLs. Add practice-based requirements for the storage and disposal of PFAS-containing foam. Add monthly PFAS monitoring at Outfalls 003, 004, and 005 for all 40 PFAS covered under Final EPA Method 1633.	Section VII
Include monthly monitoring at Outfall 005 for any known pollutants without permit limits. Include monitoring at Outfalls 003 and 004 for the pollutants with limits or monitoring at Outfall 005 in order to better understand whether the pollutants present in the process water effluent are also present in the refinery's stormwater.	Section VIII
Reject BP's alternative thermal effluent limitations 316(a) request	Section IX
Ensure that BP meets CWA Section 316(b) requirements by requiring the installation of flow meters	Section X
Shorten the compliance schedule for the selenium monthly average limits to less than 5 years, eliminate the compliance schedule for selenium Daily Maximum concentrations, and shorten the compliance schedule for selenium Daily Maximum quantities to one year	Section XI.A
Do not reduce monitoring frequency for oil and grease. Add a 10 mg/L daily maximum oil and grease WQBEL to Outfall 005	Section VIII, XI.B
If IDEM includes a mixing zone in the final permit, include monitoring to determine whether existing uses inside the mixing zone are protected	Section XI.C
Fix errors listed in Section XI.D	Section XI.D

Thank you for your consideration of these comments! Please feel free to reach out with any questions or if you need additional information. In addition, please notify all of the persons listed below with any changes to the status of this permit, including any revisions to the Draft Permit and the issuance of a final permit.

Sincerely,

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Attachments

Attachment 1, BP Whiting Refinery DMR Data

Attachment 2, BP Whiting Refinery TRI Data

Attachment 3, EPA, *Detailed Study of the Petroleum Refining Category* (Sept. 2019)

Attachment 4, EIP, *Oil's Unchecked Outfalls*: *Water Pollution from Oil Refineries and EPA's Failure to Enforce the Clean Water Act* at 24 (Jan. 2023)

Attachment 5, EPA, *Addressing PFAS Discharges in NPDES Permits and Through the Pretreatment Program and Monitoring Programs* (Dec. 5, 2022).