EARTHJUSTICE

May 19, 2023

Via E-filing

Ms. Lisa Felice
Michigan Public Service Commission
7109 W. Saginaw Hwy.
P. O. Box 30221
Lansing, MI 48909

RE: MPSC Case No. U-20763

Dear Ms. Felice:

Attached please find:

- Response Brief on Remand on Behalf of the Bay Mills Indian Community
- Certificate of Service.

Sincerely,

Christopher R. Clark

Christopher R. Clark
cclark@earthjustice.org

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the Application of Enbridge Energy, Limited Partnership for Authority to Replace and Relocate the Segment of Line 5 Crossing the Straits of Mackinac into a Tunnel Beneath the Straits of Mackinac, if Approval is Required Pursuant to 1929 PA 16; MCL 483.1 et seq. and Rule 447 of the Michigan Public Service Commission's Rules of Practice and Procedure, R. 792.10447, or the Grant of other Appropriate Relief	U-20763 ALJ Christopher Saunders

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RESPONSE BRIEF ON REMAND

ON BEHALF OF

THE BAY MILLS INDIAN COMMUNITY

MAY 19, 2023

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INTRODUCTION

Enbridge's proposed tunnel presents a grave risk of a catastrophic explosion underneath the Straits of Mackinac. Two renowned, independent and experienced experts testified that the pipeline could fail, Line 5 product could be released within the tunnel, the release and resulting vapors could ignite and explode, and the resulting fire could cause the tunnel to collapse, allowing oil and natural gas to contaminate the Great Lakes.

In response, Enbridge has offered incomplete explanations and analyses in an effort to convince the Commission that the concerns raised by the experts will not occur. In essence, Enbridge asks the Commission to trust that a worst-case scenario—a catastrophic explosion or fire that leads to a breach of the tunnel—will not happen.

But ever-changing probability analyses and a stubborn refusal to consider worst-case scenarios are no substitute for sound engineering and design. The evidence demonstrates that the risks identified by the experts are real, the design of the proposed tunnel is deeply flawed, and building a tunnel underneath the Straits would simply be replacing the risks presented by the dual pipelines with the risk of a catastrophic explosion. Trust in Enbridge's never-before-built tunnel is not warranted, and the Commission should refuse Enbridge's invitation to ignore the risks. The application should be denied.

ARGUMENT

I. ENBRIDGE HAS FAILED TO DEMONSTRATE THAT THE TUNNEL PROJECT MEETS OR EXCEEDS CURRENT SAFETY AND ENGINEERING STANDARDS SO AS TO PREVENT A RELEASE OF PRODUCT FROM REACHING THE WATERS OF THE GREAT LAKES.

After two separate evidentiary hearings, the evidence fails to demonstrate that the tunnel project meets or exceeds current safety and engineering standards so as to prevent a release of product from reaching the waters of the Great Lakes. As a result, the Commission cannot conclude that the application satisfies prong (3) of its Act 16 analysis. Bay Mills addresses each of Enbridge's arguments about the safety and design of its proposed tunnel in the order they are presented in Enbridge's brief.

A. Enbridge's Quantitative Risk Assessment Is Based On A Flawed Probability Analysis And Creates The False Impression That The Tunnel Is Safe.

Enbridge's central argument on remand—that a catastrophic failure in the tunnel is an extremely unlikely event—relies on a quantitative risk assessment that minimizes identified engineering risks by assigning a misleading numeric probability value to suggest that the proposed project is "safe."[1] As Mr. Kuprewicz testified, this assignment of probability estimates to known, identified risks during a permitting process is dangerous because it invites complacency."[2]

This complacency is why Mr. Kuprewicz opined that relying on a quantitative approach during the permitting stage—when design decisions are made, adjusted, and all scenarios are planned for—is not appropriate and is, in fact, dangerous.[3] An operator who adopts a quantitative approach to the construction and, later, to the operation of a pipeline will inevitably drive the line

[1] Kuprewicz Direct Testimony on Remand, 17 Tr. 2622.

[2] *Id.*

[3] *Id.*

toward failure by minimizing, instead of addressing, the risks.[4] And, of course, the failure of any pipeline—but particularly a hazardous liquids pipeline in a high consequence area—has the potential for causing fatalities and immense destruction of the surrounding environment.[5]

The reliance on Mr. Godfrey's quantitative approach by Enbridge and Staff witnesses is problematic for many reasons. It does not present the data relied on in a way that can be replicated or checked for accuracy.[6] It was not offered until after the Commission re-opened the matter, even though the analysis was conducted well before Enbridge witnesses first testified to the probability of a release from the pipeline.[7] It does not account for the fact that the risks inherent in the complicated construction and operation of situating a pipeline in a tunnel are additive, such that to determine the probability of product escaping from the proposed tunnel a probability should be the sum total of all events, not just a reliance on one numerical value attached to one event.[8] And it does not account for the fact that the risks are interactive, such that one event (e.g., a construction defect) may make another event (e.g., axial loading stress) more likely to cause a rupture.[9]

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[4] *Id.*

[5] *Id.* at 2622-2633.

[6] *See* Bay Mills' positions set forth in the Initial Brief on Remand on behalf of the Bay Mills Indian Community at 18-23; and further the Brief in Support of Bay Mills' Application for Leave to Appeal at 12-16.

[7] *See* Godfrey Direct Testimony, 17 Tr. 2436 (stating the FMEDA workshop occurred on November 16 and 18, 2021); Dennis Cross Examination on Remand, 16 Tr. 2211 (stating he attended the workshop); *Id.* at 2213 (stating that he provided inputs for the workshop); cf. Surrebuttal Testimony of Aaron Dennis, 8 Tr. 798-805 (dated January 14, 2022 and includes no mention of a probability of failure analysis).

[8] When the probability of two events is considered, the calculation of the probability of either Event A or Event B occurring is expressed as: P(A or B) = P(A) + P(B) – P(A and B). *See also* Exhibit A-28, Part 1 at 425-474 "Evaluation of Anchor Strike Prevention and Protection Measures for the Line 5 Crossing of the Mackinac Straits," prepared by C-FER Technologies. The C-FER Report calculates the probability of failure of the dual pipelines for several different scenarios and then adds the probabilities together to reach a conclusion about the overall likelihood of failure. Notably, Godfrey's failure to do that here makes a comparison to the dual pipelines impossible.

[9] Mr. Kuprewicz noted that: "Mr. Godfrey does not take into account the interactive threats between the unusual and abnormal loading that this design will place on [the] pipeline's girth welds and HAZs. Enbridge has not demonstrated it is taking the unique threat of catastrophic failure at girth welds or heat affected zones seriously."

Even more troubling, however, is that Mr. Godfrey's quantitative approach does not address the primary engineering concern raised by Mr. Kuprewicz about the proposed tunnel design. Mr. Kuprewicz testified that a pipeline installed on rollers and anchored in the middle of the tunnel will place unusual abnormal loading on the pipeline's girth welds and HAZs.[10] This loading can result in a full bore pipeline rupture.[11] This concern is heightened by the use of X-70 pipe.[12] Mr. Godfrey, as well as MPSC Staff witnesses, respond by stating that the rollers will alleviate the "longitudinal" stress placed on the pipeline. – i.e. the stress along the pipeline's length. But there is nothing in the record about the axial shear stress the pipeline will experience from the resulting longitudinal movement that places the girth welds and HAZs at heightened risk.[13] Notably, Enbridge did not provide engineering calculations on this point and their Engineer of Record, Arup, provided no testimony. The concern that a pipeline moving on rollers will experience abnormal axial shear loading is far too important to be dismissed as an unlikely event based on Enbridge's insufficient record.

Last, Godfrey's decision to adjust his calculated probability down by an entire order of magnitude lacks any credible explanation or analysis and is undermined by the very data upon

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Kuprewicz Direct Testimony on Remand, 17 Tr. 2632. Mr. Kuprewicz's testimony about the girth welds is illustrative of the broader point: comprehensive risk assessment must consider the interactive nature of events and not just reach conclusions based on the calculated probability of one type of failure.

[10] *Id.* at 2631.

[11] *Id.*

[12] See Exh. BMC-43 (Joint Industry Report titled *Enhanced Girth Weld Performance for Newly Constructed Grade X70 Pipeline* dated May 29, 2020); Exh. BMC-54 ("Pipeline Safety: Potential Low and Variable Yield and Tensile Strength and Chemical Composition Properties in High Strength Line Pipe," 74 Fed Reg 23930 (May 21, 2009)); Exh. BMC-55 ("Pipeline Safety: Girth Weld Quality Issues Due to Improper Transitioning, Misalignment, and Welding Practices of Large Diameter Line Pipe," 75 Fed Reg 14243 (March 24, 2010)).

[13] Kuprewicz Direct Testimony on Remand, 17 Tr. 2631-2632 (explaining how the welded portion of the pipe affects its ability to tolerate various abnormal loading stresses and, further, how Mr. Godfrey's analysis fails to take this into consideration).

which he relies.[14] A review of the Pipeline and Hazardous Materials Safety and Administration ("PHMSA") reportable incident database reveals that, during the years 2002 through 2022, Enbridge experienced 20 incidents attributed to operator error– an average of one incident per year.[15] Nevertheless, Godfrey makes his order-of-magnitude probability adjustment because he stated, without support, that Enbridge has an Integrity Management program that prevents failures from occurring and detects them should they occur. In essence, Godfrey suggests that Enbridge should be given a probability "credit" because, in his view, Enbridge is unlikely to experience "operator error."[16] The numerous operator errors attributed to Enbridge in the PHMSA database suggest that such an adjustment is completely unwarranted.

The State of Michigan has felt the effects of Enbridge's overconfidence in its own ability to control operator error when the Line 6B rupture continued to spill oil for seventeen hours while the release went undetected; the spill from Line 6B happened only a few days after Enbridge made assurances to Congress that it had procedures in place to prevent such a failure from occurring.[17] Simply put, Mr. Godfrey's "order of magnitude" adjustment is nothing more

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[14] *See* Exh. A-29 at 7 (adjusting the probability calculation from $3.77x10^{-6}$ to $3.77x10^{-7}$).

[15] The data can be viewed through the link provided by Mr. Godfrey, choosing "Operator Information," and then utilizing the dashboard to search for Enbridge (Operator ID 11169). Click on the Operator Dashboard Link, open the Incidents Tab, and adjust the Year criteria accordingly. *See* https://www.phmsa.dot.gov/data-and-statistics/pipeline/distribution-transmission-gathering-lng-and-liquid-accident-and-incident-data.

[16] MPSC Staff conclude that Mr. Godfrey's order of magnitude adjustment is "a reasonable assumption for a risk assessment at this time, pending assumptions derived from future integrity assessments during operation and maintenance." MPSC Staff Initial Reopened Record Brief at 6. Yet, the Staff offers no explanation as to why the assumption is reasonable. Furthermore, the Staff's suggestion that this kind of unsupported assumption is acceptable "at this time," is exactly what leads to the "Space Shuttle Syndrome" that Mr. Kuprewicz warns can lead to disaster. *See* Kuprewicz Direct Testimony on Remand, 17 Tr. 2643 (explaining that "Space Shuttle Syndrome refers to what occurs when people ignore or underestimate risk to drive to a preordained decision to the point where they dismiss or ignore very real risk in favor of going forward with a project.")

[17] *See* Initial Brief on Remand on behalf of the Bay Mills Indian Community at 8, 28; Exhibit BMC-59; Kuprewicz Direct Testimony on Remand, 17 Tr. 2636-2639.

than a biased assertion by a witness employed by a company whose financial interest is tied to Enbridge.[18]

B. Enbridge's Argument That The Tunnel Will Withstand An Explosion Fails To Consider A Worst Case-Scenario.

The evidence demonstrates that an explosion could cause the tunnel structure to fail. Initially, Enbridge refused to provide any information about the tunnel's ability to withstand an explosion. The Commission observed in its July 7 Order that "there [was] no information on the record regarding the concrete's ability to withstand the effect of a high-pressure air impact from an explosion."[19] Enbridge filed its witnesses' direct testimony on October 21, 2022, and did not address the Commission's observation about lack of evidence regarding the concrete's ability to withstand a high-pressure event. The MPSC Staff then served a discovery request on Enbridge requesting the same information about the concrete's ability to withstand the impact of a high-pressure event.[20] Enbridge objected and, through its counsel, again refused to provide the information.[21] It was not until *after* Bay Mills provided testimony that the Commission found was absent from the record, that Enbridge provided Mr. Ferrara's rebuttal testimony and his "Explosion Study."

Bay Mills' expert Brian O'Mara[22] testified that if a fire damaged the tunnel to the extent that the secondary containment system was breached, Line 5 product would overcome the

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[18] *See* Cross Examination of Ray Philipenko, 16 Tr. 2286 (testifying that Enbridge's CPM system has been built on DNV's computer software for the last 25 years and that Enbridge continues to have a licensing agreement and pay DNV an annual support fee).

[19] July 7 Order at 45.

[20] Exh. BMC-62.

[21] *Id.*

[22] Enbridge takes repeated aim at Mr. O'Mara's professional experience yet its attempts to discredit Mr. O'Mara are refuted by the evidence of his unimpeachable qualifications. Mr. O'Mara is a Geological Engineer with a degree from Michigan Technological University. His professional experience spans more than 30 years of experience in environmental consulting specializing in geotechnical and hydrogeologic investigation—including tunnel and shaft

hydrostatic pressure outside of the tunnel and migrate upwards into the waters of the Straits.[23] Mr. O'Mara then opined that Enbridge's response to his testimony, by way of an "Explosion Study," was inadequate because Dr. Ferrara did not model inputs that reflect a worst-case scenario.[24] The results of the "Explosion Study," as Mr. O'Mara explained, only suggest that a tunnel—about seven-times smaller than the one proposed[25]—can withstand the overpressure generated by an explosion following a pinhole release; it proves nothing more.

Enbridge spins the facts and states that "the overpressure created by worst-case explosion scenarios could not cause tunnel failure."[26] But if Dr. Ferrara's "computer model [was] of the worst-case scenario,"[27] as Enbridge claims, he would have used inputs representative of a full-bore rupture of the pipeline. To be clear, Dr. Ferrara *chose* data that he input into a computer model and his choice of data was based on "the work carried out in the previous DNV Probability of Failure Analysis."[28] He chose to run a model based on a tunnel that was level and only 1000 meters long; a release from a single hole that was 0.315 inches in diameter; a vapor cloud width, length, and height that did not fill the tunnel; and a constant atmospheric

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construction and hydrocarbon contaminant fate and transport, containment, capture and treatment solutions. He has a proven track record of providing insightful and practical solutions to complex site investigations. His public sector clients include the Detroit Water and Sewerage Department; the Milwaukee Metropolitan Sewerage District; the US Air Force; US Army Corps of Engineers; and the USEPA. His private sector clients include 3M; BASF; Consumers Energy, CSX Transportation; DTE Energy; Ford; General Electric; General Motors; Marathon Petroleum; Northrup Grumman; and law firms, including Miller Canfield, Dickinson Wright, and Kirkland & Ellis. *See generally* Exh. BMC-61.

[23] *See generally* O'Mara Direct Testimony on Remand, 18 Tr. 2664-2682.

[24] *See generally* O'Mara Sur-Rebuttal Testimony on Remand, 18 Tr. 2700-2704.

[25] The explosion study contemplates a tunnel and pipeline segment that is 1000 meters (or 0.6 miles) long, but the proposed tunnel will be over 4 miles long. Exh. A-35 at 11.

[26] Enbridge Initial Brief on Reopening at 10-11.

[27] *Id.*

[28] Exhibit A-35 at 5.

temperature, all of which were provided by Enbridge.[29] The computer then ran the model based on Dr. Ferrara's chosen inputs and reached its conclusion.

Without including inputs that reflect a full bore rupture of the pipeline along a 4 mile inverted tunnel, it is inaccurate to conclude that the overpressure generated in the tunnel created by an explosion from an ignition of NGL ("natural gas liquids") product is 0.386 barg, and misleading to state that the conclusion is "conservative."[30] As a result, the Commission should afford Dr. Ferrara's rebuttal testimony little weight, and it should reject Enbridge's attempts to overstate Dr. Ferrara's conclusions.[31]

Whether the tunnel will be able to maintain secondary containment in the event of an explosion is a crucial question. Yet, Enbridge, after initially refusing to provide the information, modeled a release from a hole the size of a pencil eraser with assumptions that are not representative of the proposed tunnel project. Following the Line 6B disaster, the National Transportation Safety Board concluded that Enbridge had failed to adequately plan for a response to a worst-case discharge.[32] The consequence was that emergency response workers were not prepared, heightening the environmental damage.[33] Here, Enbridge is following the same path.[34]

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[29] Exhibit A-35 at 8, 11.

[30] O'Mara Sur-Rebuttal Testimony, 18 Tr. 2700-2704.

[31] To find an example of a worst-case scenario, one need only look to Bellingham, Washington or Marshall, Michigan, or the recent Keystone Pipeline failure in Kansas, among many other historical examples of pipeline ruptures. Those disasters were not caused by a pinhole release the size of a pencil eraser—as Dr. Ferrara modeled. Each disaster involved a chain of events that culminated in a full-bore rupture of the pipeline, a massive spill and, in the case of the Olympic Pipeline release—an unintended ignition event. *See* Exh. BMC-52; Exh. BMC-58; Exh. BMC-64.

[32] *See* Exh. BMC-58 at 14.

[33] *Id.*

[34] Staff is likewise following the same path by accepting Enbridge's choreographed version of a hypothetical release and refusing to consider a true worst-case scenario involving a massive hydrocarbon fire, multiple explosions and loss of secondary containment—and the resulting devastation. *See* Staff's Initial Reopened Record Brief at 13.

C. Enbridge's Argument That There Is No Evidence To Suggest Methane Will Cause An Explosion Is Not Supported By The Record.

Dr. Vitton's opinion that methane does not present a risk to this project is contradicted by the evidence. Mr. O'Mara testified that the presence of methane could cause an explosion during construction or during the continued operation of the replacement pipeline.[35] He testified that his concern was informed by his professional experience and training;[36] his review of the Geotechnical Data Report;[37] and well-documented historical reports of methane and related tunnel disasters throughout the Great Lakes region.[38]

Mr. O'Mara's concerns are well-founded. The evidence demonstrates that:

- The United States Geological Survey, an agency within the United States Department of the Interior and the nation's largest water, earth, and biological science, and civilian mapping agency, published a Fact Sheet in June of 2020 which identified 290 million barrels of shale oil in the Ordovician Collingwood Formation.[39] Not only does this geologic formation directly underlie the Straits of Mackinac, but the Straits area is also where this formation is the thickest and closest to the surface.[40]

- Enbridge's geotechnical investigation did not reach rock at the deepest part of the Straits.[41] As a result, no data was gathered at the deepest elevation of the tunnel path and the conditions there remain unknown.

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[35] O'Mara Direct Testimony on Remand, 18 Tr. 2670.

[36] O'Mara Direct Testimony on Remand, 18 Tr. 2665-2668; *See also* BMC-61.

[37] O'Mara Direct Testimony on Remand, 18 Tr. 2677; O'Mara Redirect Examination, 18 Tr. 2757; *See also* Exh. MM4 at 2496-2624 and Appendix A attached to the Initial Brief on Remand on Behalf of the Bay Mills Indian Community (extracted boring logs from Exhibit MM4).

[38] O'Mara Direct Testimony on Remand, 18 Tr. 2677-2678.

[39] Subsurface oil and gas deposits are sources of methane and, because it is lighter than air, methane rises through fractures in bedrock or, when under pressure, moves in different directions. Vitton Cross-Examination, 17 Tr. 2544-2545, 2552.

[40] *See* Exh. BMC-70. Dr. Vitton responded that "there's nothing in this paper to suggest there is or are deposits there." Vitton Cross-Examination, 17 Tr. 2562. That is not accurate. For clarification, the Fact Sheet refers to "undiscovered, technically recoverable" oil and gas resources. Exh. BMC 70 at 1. The USGS assesses "undiscovered, technically recoverable resources" as those which are estimated to exist based on geological knowledge and theory. *See* https://www.usgs.gov/faqs/what-difference-between-assessed-oil-and-gas-resources-and-reserves#:~:text=The%20USGS%20assesses%20%E2%80%9Cundiscovered%2C%20technically,on%20geologic%20knowledge%20and%20theory.

[41] Redirect Examination of Brian O'Mara, 18 Tr. 2754-2755 (noting that Boring number BH19-24, which is the

- Despite quality control issues with the geological data that was sent to the laboratory, methane was nonetheless detected in 19% of the samples.[42]

Thus, the evidence suggests that methane could pose a risk to the construction and operation of the replacement pipeline.

Although Enbridge and Dr. Vitton now claim that there are no sources of methane in the Straits, they previously recognized that methane does pose a potential risk. Enbridge acknowledged a potential hazard from explosive gases, including methane and hydrogen sulfide, in a report it submitted to the State of Michigan in 2018.[43] Dr. Vitton was a contributor to this research, and was specifically tasked with assisting "in the collection and analysis of existing geological and geotechnical information for the project site."[44] Despite this prior acknowledgement of research indicating that explosive gases pose a risk, Dr. Vitton's rebuttal testimony makes no mention of this prior conclusion, nor does it explain why the research and historical records that "indicate potential hazards from explosive gases" were not considered. Instead, Vitton makes inaccurate statements, including that there is a "lack of oil and gas field or

boring representing the deepest part of the Straits, did not even encounter rock); Exh. MM4 at 34 (Table 5.4: Deepwater Drilling Program identifying N/A at the rock depth drilled for BH19-24).

[42] Enbridge claims that Mr. O'Mara did not provide his calculations or the significance for this fact. The calculation is straightforward and based on Dr. Vitton's testimony: 21 samples were sent to the lab, divided by the 4 samples that detected methane, equals 0.19 or 19 percent. *See* Vitton Rebuttal Testimony, 17 Tr. 2465. The significance is also straightforward: "Enbridge has made statements that methane was not detected in the Straits, but that position is directly contradicted by its own Geotechnical Data Report (GDR)." O'Mara Direct Testimony on Remand, 18 Tr. 2677. Further, "[g]iven the small number of samples tested (less than one per 1000-feet of tunnel length), it is likely that more methane will be encountered in areas that have not been tested." *Id.*

[43] Exh. A-9 at 31.

[44] *Id.* at 11.

coalbeds in the Straits,"[45] and overbroad conclusions based on irrelevant studies of methane levels in the water column of the Great Lakes.[46]

There is no credible way that Enbridge can assert that methane poses no risk to the project. Nevertheless, Enbridge continues to dismiss the threat.[47] Even more troubling is that Aaron Dennis confirmed that Enbridge has no plans to conduct further geological investigations beyond what was conducted in 2019,[48] and Dr. Vitton opined that no mitigation measures need to be done aside from following standard OSHA procedures.[49] The bottom line is that methane presents a risk to the tunnel project and, here again, Enbridge is presenting incomplete and inaccurate analysis to convince the Commission to approve the project despite the risk.

D. Enbridge's Argument That There Is No Circumstance Under Which Product From Line 5 Could Escape The Tunnel Fails To Consider A Worst-Case Scenario.

Enbridge's argument that there is "no conceivable scenario" in which Line 5 product could escape the confines of the tunnel and migrate into the Straits again demonstrates Enbridge's unwillingness to consider the impact of a worst-case scenario. As Mr. O'Mara explained, "[h]ydrostatic pressure is the downward force exerted by gravity from the water, sediment and rock present above the proposed tunnel."[50] The hydrostatic pressure outside the tunnel will naturally push fractured rock, sediment, and water against the intact tunnel, or into a compromised tunnel, because the pressure inside the tunnel is essentially zero and the material

[45] Vitton Rebuttal Testimony on Remand, 17 Tr. 2469.

[46] *Id.* at 2470. Here, Vitton directly contradicts the conclusion set forth in Exh. A-9 and presumably offered by him given the subject matter that he was contributing to, that research "indicate[s] potential hazards from explosive gases including methane and hydrogen sulfide," stating that "[s]cientific research supports the lack of methane in the Straits."

[47] Staff, too, dismissed the threat of methane by exclusively relying on the faulty data in Enbridge's GDR to reach its conclusions in Exh. S-37.

[48] Dennis Direct Testimony on Remand, 16 Tr. 2234

[49] Vitton Cross-Examination on Remand, 17 Tr. 2532.

[50] O'Mara Direct Testimony on Remand, 18 Tr. 2679

under higher pressure will move into a space with lower pressure—that is physics. However, Enbridge's "law of physics" argument[51] is only valid if one assumes a collapse of only a small portion of the tunnel, which is far from a worst-case scenario and does not address Mr. O'Mara's testimony.

An explosion is an uncontrolled event.[52] An explosion in the confines of a tunnel has the potential to be catastrophic: an explosion could ignite a product fire resulting in a fuel-rich flame from a large pool of hydrocarbons that burns for hours, *not 180 minutes*, and triggers additional explosions and fires throughout the length of the 4-mile-long pipeline filled with hazardous liquids.[53] As Mr. O'Mara explained, this kind of catastrophic failure with intense heat could result in a "pancake failure," or a failure where the weight of the rock, sediment and water above the tunnel will cause the weakened portions of the tunnel segmented liner to fail and collapse inward.[54]

In the event of a pancake failure or a catastrophic total collapse where the tunnel roof crashes down, the tunnel interior will comingle and be filled with rock, sediment, and water from what was formerly outside the tunnel.[55] At this point, the secondary containment provided by the tunnel for the pipeline will be lost—indeed, much of the structure will be lost—and the pressure at the points of collapse will quickly equilibrate to the hydrostatic pressure. However, the product in the pipeline will remain at its operating pressure which, by all accounts, will

[51] Enbridge Initial Brief on Reopening at 17.

[52] Kuprewicz Cross-Examination, 10 Tr. 1386. As Mr. Kuprewicz testified based on his experience, first responders are "scared as hell of explosions because explosions are an uncontrolled event, and they get it, they don't want to be in an explosion environment." 10 Tr. 1385-1386.

[53] Enbridge experienced an explosion along Line 5 when a vapor cloud exploded in Crystal Falls, Michigan. The explosion ignited a fire that burned for 36 hours. Kuprewicz Direct Testimony, 10 Tr. 1329-1330.

[54] O'Mara Direct Testimony on Remand, 18 Tr. 2672.

[55] *Id.* at 2680-2681.

significantly exceed the hydrostatic pressure.[56] As product continues to flow out of the pipe under pressure—a not unheard-of scenario considering it took Enbridge 17 hours to correctly interpret the alarms sounding during the Line 6B disaster—it will continue to "pump" or spew product out at pressures greater than the hydrostatic pressure until the release is ultimately stopped—which will be considerable time in the event of a rupture.[57]

Therefore, in the event of an explosion and/or fire that leads to a collapse and loss of the secondary containment, Line 5 product will be released into the surrounding environment because the pipeline will no longer be isolated from the exterior and the operating pressure of the pipeline will exceed the hydrostatic pressure.[58] This, too, is physics.

E. Enbridge's Ignores The Fact That Its Leak Detection System Will Not Prevent A Catastrophe.

Enbridge states that it is "confident" in its ability to detect any release within the tunnel, but Enbridge's track record with respect to its leak detection system indicates that such assurances should be viewed with deep skepticism. To convince the Commission that it will detect any release within the tunnel, Enbridge points to its Leak Detection Alarm Manager ("LDAM") system that it claims will require an investigation of any alarms within ten minutes.[59] Enbridge further states that if any one of three control room employees identifies a leak trigger,

[56] *Id.* Further, Enbridge takes aim at Brian O'Mara for using the design maximum operating pressure of 1440 psi in his example. However, Enbridge's stated maximum operating pressure of 463 psi does not advance their argument; 463 psi is still greater than the hydrostatic pressure at the deepest part of the tunnel.

[57] *Id.*; see also Exh. BMC- 58.

[58] O'Mara Direct Testimony on Remand, 18 Tr. 2680-2681.

[59] Enbridge Initial Brief on Reopening at 19.

the system will "request" an emergency shutdown.[60] Enbridge also notes that if an alarm has not been invalidated, an automatic shutdown occurs at the 11-minute mark.[61]

But we have heard this story about quick response times and automatic shutdowns before. When he testified before Congress in July 2010, Mr. Richard Adams, Enbridge's Vice President of U.S. Operations, Liquid Pipelines, made similar assurances about the company's control room processes and automatic shutdown systems:

> Certainly, our response time from our control center can be almost instantaneous, and our large leaks are typically detected by our control center personnel. They have enough experience and training that, with usually a leak of any size, they can view that there is a change in the operation system, and there are provisions that, if there is uncertainty, they have to shut down within a period of time, and that would include the closing of automatic valves.[62]

Yet, days later, the Marshall, Michigan leak went undetected for hours.[63] Enbridge's assurances are further undermined by the fact that, as discussed in Section I.A above, over the past 22 years, Enbridge has experienced over 20 releases due to operator error. Based on this track record, Enbridge's boastful confidence in its leak detection system is not warranted.

But, even more importantly, even if Enbridge's leak detection systems and response procedures work as intended, a full-bore rupture or other high rate-of-release event will fill the tunnel with tons of product in a matter of minutes. So, even if the release is detected, and even if the control room personnel act quickly in response, an explosive environment will have been created within the tunnel, setting the stage for a possible catastrophe. Here again, Enbridge is not considering a worst-case scenario.

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[60] *Id.*

[61] *Id.* at 20.

[62] Exh. BMC-59 at 39.

[63] Exh. BMC-58 at 13-15.

F. Enbridge's "One in One Million" Argument Misrepresents The Record.

In its Initial Brief on Reopening, Enbridge utterly—and falsely—mischaracterizes prior testimony offered by Aaron Dennis in which he repeatedly testified that "the likelihood of a release is less than 0.000001."[64] When he testified in the first phase of the case, Mr. Dennis could provide no basis for this number. Indeed, the Commission noted in the July 7 Order: "[T]he Commission finds that Enbridge did not provide record evidence of the data and methodology used to calculate the Replacement Project's alleged on in one million risk of release, and therefore the parties and the Commission are unable to review the calculation."[65] It appears that Enbridge pulled a number out of thin air and submitted it as evidence in the hope that the Commission would rely upon it in granting its application.

In response to the Commission's observation that the record lacked any support for the one-in-one-million testimony, Enbridge has decided to switch horses and rely on the flawed probability analysis of Mr. Godfrey instead of the unsupported statements of Mr. Dennis. With respect to Mr. Dennis's prior testimony, Enbridge now argues for the first time that the "one in a million figure is a reliability target for managing the reliability of the Line 5 replacement segment through Enbridge's Integrity Management Program,"[66] not the actual probability of release. This characterization amounts to revisionist history as it is directly at odds with Enbridge's prior arguments about the testimony.[67] As Mr. Dennis acknowledged on cross-

[64] *See e.g.*, Dennis Surrebuttal Testimony, 8 Tr. 800-802; Dennis Cross-Examination, 8 Tr. 822 ("the likelihood of a release at the pipeline inside the tunnel is at one in a million").

[65] July 7 Order at 45.

[66] Enbridge Initial Brief on Reopening at 20.

[67] It is also contrary to Enbridge's prior arguments about this number. In their Initial Brief following the first evidentiary hearing, Enbridge states "the design and inspection regime for the replacement segment makes the likelihood of a release from that segment to be one in a million." Enbridge Initial Brief at 22.

examination: "I said the likelihood of release at the pipeline inside the tunnel is one in a million."[68] Mr. Dennis never stated that the one in one million figure was a "target."

G. Enbridge Fails To Justify The Use Of Less Stringent Electrical Standards In The Tunnel.

Enbridge's arguments about the type of electrical equipment to be used in the tunnel ignore the Commission's request for information on this important topic. Mr. Kuprewicz testified that the use of the more stringent Class 1, Division 1 electrical equipment—instead of Class 1, Division 2—would reduce the risk of an ignition event occurring in the proposed tunnel.[69] In the July 7 Order, the Commission stated that it was "necessary" for Enbridge to provide information "regarding the feasibility of exceeding the minimum OSHA standards and designing the electrical equipment in the tunnel to Class I, Division 1. . . ."[70]

Enbridge failed to provide the requested feasibility information. Instead, in its post-hearing brief, Enbridge states that "[i]t is unclear whether it is even feasible to design the electrical equipment to meet the more stringent standards for Class I, Division 1."[71] It states that it is also "unclear" where the Tunnel Service Vehicle could be designed to meet the safer standard.[72] And, it argues that the use of Class I, Division 1 equipment would "perhaps" require a redesign of the tunnel to accommodate the spacing needs.[73] The only reason the feasibility of using a more stringent electrical classification for the proposed tunnel remains *unclear* is because

[68] Dennis Cross-Examination, 8 Tr. 822.

[69] Kuprewicz Rebuttal Testimony, 10 Tr. 1328-29.

[70] July 7 Order at 45-46.

[71] Enbridge Post-Hearing Brief at 24.

[72] *Id.*

[73] *Id.* at 25.

Enbridge, as the applicant, failed to supply the information that the Commission ordered it to produce.

Instead of providing the requested feasibility information, Enbridge incorrectly argues that Class I, Division 1 electrical equipment is not appropriate.[74] The Class I, Division 1 classification is more stringent than the Class I, Division 2 standard[75] and is used to reduce the risk of an ignition event in a location where hazardous gases may exist, or in a location where a breakdown of equipment or processes might release ignitable concentrations of flammable gases or vapors, and might also cause simultaneous failure of electric equipment—such as in the event of an explosion. It would be entirely appropriate to use equipment that is better suited for such circumstances. Enbridge's argument to the contrary should, therefore, be rejected.

H. The Evidence About The Ventilation System Does Not Support The Conclusion That It Will Protect The Tunnel From An Explosive Event.

Enbridge's ventilation system will not, and is not designed to, prevent a catastrophic event in the tunnel. Due to the unique design of the proposed tunnel, released hydrocarbons and/or vapor will accumulate in the lowest part of the tunnel elevation.[76] As Mr. Kuprewicz testified: "One intended purpose of the ventilation system is to sweep any released fuel vapor out of the tunnel or reduce the amount of released fuel vapor so that it is out of the flammability range, such that it will not ignite and detonate."[77] But due to the large diameter of the tunnel, it will be difficult to control the fuel air mixture within the tunnel, "which increases the possibility of multiple detonations/explosions within the tunnel."[78]

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[74] Enbridge Initial Brief on Reopening 24-45.

[75] Kuprewicz Rebuttal Testimony, 10 Tr. 1327-28.

[76] Kuprewicz Rebuttal Testimony, 10 Tr. 1327.

[77] *Id* at 1328.

[78] *Id.*

When the Commission requested additional information about the ventilation system,[79] Enbridge clarified that the purpose of the ventilation system was not to mitigate the risk of a fire or explosion, but strictly to provide "breathable air" when maintenance personnel are in the tunnel.[80] Enbridge's stated purpose of the ventilation system, however, confirms that it will not be able to sweep released fuel vapor up and out of the tunnel so that it is out of flammability range—leaving, instead, an unmoving explosive atmosphere. For example, a release of hydrocarbon vapors may occur and settle at the low point of the tunnel, undetected and unmoving, *until* the ventilation system is turned on to clear the air for maintenance personnel. An ignition event could occur at any time before maintenance personnel are set to enter the tunnel.

Even if the ventilation system is turned on to provide "breathable air" for maintenance workers, Enbridge did not prove that the ventilation system for the Replacement Project is adequate for the diameter of the tunnel. Rather, Enbridge calculated the critical velocity needed to be achieved to provide personnel with an exit path clear of smoke in the event of a fire.[81] However, the "design fire size" used in the calculation was "10 MW."[82] That measurement is "representative of a large vehicle fire."[83] The size of a large vehicle fire cannot be said to be comparable to the size or intensity of a fire resulting from a breach of Line 5, and even less so to a full-bore rupture of the line—a 4-mile-long segment transporting 540,000 barrels per day—

[79] *See* July 7 Order at 46 requesting "the data and the methodology demonstrating that the ventilation system planned for the Replacement Project is adequate for the diameter of the tunnel" and "the process for the activation of the ventilation system in the event of a release of Line 5 products in the tunnel."

[80] *See* Exhibit A-31 at 4 ("The ventilation system is active while maintenance personnel are inside the tunnel to provide them with breathable air while they remain in the confined space of the tunnel.").

[81] Exhibit A-31 at 4.

[82] *Id.*

[83] *Id.*

releasing roughly 16,000 gallons per minute.[84] Enbridge has suggested only that its proposed ventilation system will allow workers a path out of the tunnel in the event of a car fire; it has proved nothing more.

I. Enbridge's Argument That Its Fire and Repair Systems Meet and Exceed Current Safety and Engineering Standards Ignore the Volume and Intensity of a Massive Hydrocarbon Fire.

Enbridge's fire safety plans for the tunnel are inadequate. The issue of fire safety in the tunnel comes down to whether it is appropriate to rely on Enbridge's proposed passive fire suppression system that seals off the ends of the tunnel so as to "starve [a] fire of oxygen,"[85] or, as Mr. O'Mara testified, a Fixed Fire Fighting System (FFFS) and advanced ventilation systems that can quickly extinguish or limit fires and facilitate the removal of smoke so firefighters can rescue trapped workers and extinguish fires.[86] Enbridge's reasoning as to why an active fire suppression system should not be used is wholly inadequate. It is based on an unexplained need to reduce workers in the tunnel and the premise that a fire in the tunnel is a "remote risk."[87] However, the evidence in the record proves that maintenance workers will routinely enter the tunnel.[88] The evidence further proves that a fire is not as remote of a risk as Enbridge claims and, further, that in the event of a full bore rupture of the pipeline, a fuel-rich fire could have catastrophic consequences.[89] Given the stakes involved, Enbridge has not proved that its fire suppression system meets or exceeds safety and engineering standards.

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[84] *See* Pastor Pre-Filed Direct Testimony, 7 Tr. 564

[85] O'Mara Direct Testimony on Remand, 18 Tr. 2674

[86] *Id.*

[87] Enbridge Initial Brief on Reopening at 28.

[88] Dennis Cross Examination on Remand, 16 Tr. 2194 (testifying that individuals will routinely enter the tunnel to visually inspect various systems).

[89] *See generally* Kuprewicz Direct Testimony, 10 Tr. 1326-1330; O'Mara Direct Testimony on Remand, 18 Tr. 2669-2682.

II. THE EVIDENCE DEMONSTRATES THAT THE PROPOSED TUNNEL WILL NOT ELIMINATE THE ENVIRONMENTAL RISKS POSED BY THE DUAL PIPELINES.

The record is insufficient for the Commission to conclude that the proposed tunnel satisfies prong (2) of its Act 16 analysis. In its July 7, 2022 Order, the Commission stated that, as part of its prong (2) analysis, it "must be able to determine whether the Replacement Project is designed and routed in a manner that alleviates the many complications of maintaining and ensuring the safety of the dual pipelines and that the Replacement Project will significantly reduce or eliminate the environmental risk posed by the dual pipelines to the Great Lakes, which is Enbridge's stated purpose for the Replacement Project."[90] The evidence about the numerous troubling concerns about the safety of Enbridge's proposed design, as discussed in Section I above, demonstrates that the tunnel substitutes one set of risks for another. Therefore, it is impossible for the Commission to conclude that the tunnel reduces or eliminates the environmental threat posed by the dual pipelines.

The argument that a tunnel will "make an already safe Line 5 crossing of the Straits even safer" ignores both the urgency of the threat that the dual pipelines currently pose and the evidence that the proposed tunnel will introduce an entirely new set of risks into the Great Lakes.

The dual pipelines are not safe. In fact, they were shut down by court order in the Summer of 2020.[91] Then, in November of 2020, the State of Michigan revoked and terminated the 1953 Easement that Enbridge relied on to operate the dual pipelines in the Straits of Mackinac.[92] The State further required Enbridge to cease operation of Line 5 in the Straits—

[90] July 7 Order at 27.

[91] Ryan Jarvi, *Judge Orders Line 5 to Cease Operations*, Michigan Department of Attorney General (June 25, 2020), https://www.michigan.gov/ag/news/press-releases/2020/06/25/judge-orders-line-5-to-cease-operations.

[92] Exh. ELP-18.

which Enbridge ignored.[93] Despite the State of Michigan ordering Enbridge to cease operating in the Straits, the threat posed by the dual pipelines continues because Enbridge refuses to comply with an executive order.

But the proposed tunnel is not the answer.

Enbridge argued that the replacement pipeline situated in the tunnel will no longer be subject to the same risks as the dual pipelines—anchor strikes and bending stresses caused by the fact that the dual pipelines are now suspended in the water.[94] But, although these risks may be alleviated by the tunnel project, Bay Mills' experts identified specific risks and engineering concerns that are unique to the construction and operation of the proposed tunnel. As discussed above and in prior briefs, Mr. Kuprewicz explained how an explosion within the tunnel could be caused by a hydrocarbon release from the pipeline that generates a heavier than air vapor release which then settles in the low spots of the tunnel and is ignited by an electrical spark within the air/fuel cloud.[95]

As Mr. Kuprewicz testified how the risks and engineering concerns can lead to a catastrophic explosion:

> It is important to note that crude oil, and especially propane, in a confined space can generate a tremendous amount of pressure, especially upon detonation. Propane has a broad flammability range coupled with a lower autoignition temperature which makes this material easier to detonate or explode. In this way, propane differs from water or other materials that are typically transported through pipelines.[96]

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[93] *Id.*

[94] Godfrey Rebuttal Testimony on Reopening, 17 Tr. 2446.

[95] Kuprewicz Rebuttal Testimony, 10 Tr. 1327.

[96] *Id.* at 1329.

Mr. O'Mara further identified the risk of methane in the tunnel project and identified risks during construction and operation based on Enbridge's faulty geotechnical data.[97] He also explained how an explosive event or fire within the tunnel could result in a collapse of the tunnel lining and breach of the secondary containment system.[98] The product pushed out from the ruptured pipeline would escape the confines of the collapsed tunnel and migrate into the surrounding rock and sediment, ultimately reaching the water of the Straits of Mackinac.[99]

Thus, while tunnels can be safely constructed[100] and hazardous liquid pipelines exist, Enbridge's proposal *combines* a hazardous liquids pipeline with a confined underground environment. This combination has never been attempted before and the evidence in this matter demonstrates it has the potential to create a catastrophe in the Great Lakes.

[97] *See generally* O'Mara Direct Testimony on Reopening, 18 Tr. 2663-2682.

[98] *Id.*

[99] *Id.*

[100] Enbridge seized upon one phrase in comments submitted by Mr. O'Mara regarding Line 5 in which he stated that tunnels can be safely constructed. O'Mara Redirect Examination, 18 Tr. 2768-2769 (noting that the comments were "multiple pages;" "7 pages in one" and "another one is 16"). It comes as no surprise that Mr. O'Mara endorses the use of tunnels; he has spent his decades-long career involved in the construction of tunnels and shafts. *See* Exh. BMC-61. However, Mr. O'Mara's statement was made with an important qualifier: a *properly designed and constructed tunnel* has the potential to be safe. Mr. O'Mara explained (as he did in his written comments to EGLE and the MPSC) that there were numerous ways that Enbridge's proposed tunnel is not properly designed. *See e.g*. O'Mara Cross-Examination,18 Tr. 2725 (Noting the fundamental problem with the design is that it is an open utility tunnel; the Alternatives Analysis assumed the tunnel would be completely backfilled which is what the design was when they concluded there was a negligible risk, and further, that Enbridge relied on the conclusion that there was a negligible risk but did not adopt that design). Mr. O'Mara further explained (as he did in his written comments to EGLE and the MPSC) that Enbridge's proposal is not on track to being properly constructed. O'Mara Redirect Examination,18 Tr. 2754-2760 (explaining the faulty geotechnical data and unresolved risk of methane in the Straits). Enbridge's use of Mr. O'Mara's opinion, without appreciating his qualifying language, is misleading.

RESPONSE TO BRIEF FILED BY MICHIGAN LABORERS' DISTRICT COUNCIL AND BRIEF FILED BY MICHIGAN PROPANE GAS ASSOCIATION AND NATIONAL PROPANE GAS ASSOCIATION

The initial post-hearing brief filed by the Michigan Laborers' District Council ("MLDC") and the initial post-hearing brief filed jointly by the Michigan Propane Gas Association and National Propane Gas Association (collectively, the "Propane Intervenors") are improper and should be stricken. The Michigan Administrative Code states:

> Briefs containing factual allegations claimed to be established by the evidence shall include a reference to the specific portions of the record where the evidence may be found.[101]

The rule is clear—factual assertions in briefs must be supported by citation to the record.

MLDC's brief fails to comply with Rule 434. The brief includes a two-page section titled "Michigan Jobs and Talent Retention" that includes numerous factual assertions that MLDC claims support the notion that constructing a tunnel will generate jobs in the state of Michigan. The section includes no citations to the record in support of its factual assertions.[102] It also includes a section titled "Michigan Commerce and Environmental Safety that likewise includes factual assertions without record citations.[103] The absence of record citations is not surprising as the alleged impact of the tunnel project on jobs and the Michigan economy is outside of the scope of the case and outside the purview of this Commission. For this reason also, the brief should be stricken.

The brief filed by Propane Intervenors suffers from the same deficiency. The brief includes factual assertions regarding the delivery and use of propane to locations in Michigan.[104]

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[101] Michigan Administrative Code R. 792.10434.

[102] MLDC Initial Brief, at 4-5.

[103] MLDC Initial Brief, at 5-6.

[104] Propane Intervenors Initial Brief, at 3-4.

But, the factual assertions are not supported by record citations and are, therefore, improper. The brief should be stricken.

CONCLUSION

Based on the record evidence submitted in both phases of this contested case, and for the reasons stated above, in Bay Mills' initial brief on remand, and in the initial brief and response brief submitted by the Tribal Intervenors[105] at the conclusion of the initial phase of these proceedings, the Bay Mills Indian Community respectfully requests that the Commission **deny** Enbridge's application to construct and operate the project.

May 19, 2023

Respectfully Submitted,

By: */s/ Christopher R. Clark*

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[105] At the conclusion of the first phase of the case, four tribal intervenors (the Bay Mills Indian Community, the Little Traverse Bay Bands of Odawa Indians, the Grand Traverse Bay Band of Ottawa and Chippewa Indians, and the Nottawaseppi Huron Band of the Potawatomi) collectively filed an initial brief and response brief detailing their arguments in opposition to the application.

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STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the Application of Enbridge Energy, Limited Partnership for the Authority to Replace and Relocate the Segment of Line 5 Crossing the Straits of Mackinac into a Tunnel Beneath the Straits of Mackinac, if Approval is Required Pursuant to 1929 PA 16; MCL 483.1 et seq. and Rule 447 of the Michigan Public Service Commission's Rules of Practice and Procedure, R 792.10447, or the Grant of other Appropriate Relief	U-20763 ALJ Christopher S. Saunders

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PROOF OF SERVICE

On May 19, 2023, an electronic copy of *Bay Mills Indian Community's Response Brief on Remand* was served on the following parties:

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Date: May 19, 2023

By: Christopher R. Clark

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EARTHJUSTICE

May 5, 2023

Via E-filing

Ms. Lisa Felice
Michigan Public Service Commission
7109 W. Saginaw Hwy.
P. O. Box 30221
Lansing, MI 48909

RE: MPSC Case No. U-20763

Dear Ms. Felice:

The following is attached for paperless electronic filing:

- Bay Mills Indian Community's Initial Brief on Remand
- Appendix A, excerpted pages from Exhibit MM4
- Certificate of Service

Sincerely,

Christopher R. Clark

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cclark@earthjustice.org

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the Application of Enbridge Energy, Limited Partnership for Authority to Replace and Relocate the Segment of Line 5 Crossing the Straits of Mackinac into a Tunnel Beneath the Straits of Mackinac, if Approval is Required Pursuant to 1929 PA 16; MCL 483.1 et seq. and Rule 447 of the Michigan Public Service Commission's Rules of Practice and Procedure, R. 792.10447, or the Grant of other Appropriate Relief	U-20763 ALJ Christopher Saunders

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INITIAL BRIEF ON REMAND

ON BEHALF OF

THE BAY MILLS INDIAN COMMUNITY

MAY 5, 2023

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INTRODUCTION

After another round of testimony and cross-examination, the safety concerns about Enbridge's proposed tunnel remain. The evidence still demonstrates that the design of Enbridge's "never been done before" tunnel presents a risk that the pipeline will fail within the tunnel, creating the potential for a catastrophic fire and explosion.

And new concerns have emerged.

In direct response to an issue raised by the Commission, Mr. Brian O'Mara, an experienced geologist with decades of experience with tunnels, has opined that in the event of a fire or explosion, the concrete tunnel could collapse, allowing product from Line 5 to enter the Straits of Mackinac and contaminate one of our country's most precious natural resources—the Great Lakes. Mr. O'Mara has also raised another serious concern—the presence of methane in the Straits that could ignite and explode during the construction of the tunnel or after the tunnel is in operation.

Enbridge's response to these concerns amounts to a series of flawed and biased analyses manufactured to suggest that the risks identified by renowned experts are unlikely to occur. But the stakes are too high for the State of Michigan to gamble on catastrophe. The proposed tunnel would lie beneath a place of deep spiritual, cultural, and economic importance to Bay Mills as well as one of this country's most precious natural resources. The possibility that this misguided project would rain devastation and destruction on the Great Lakes, and to Bay Mills and other communities, is simply too great of a risk. The application should be denied.

ARGUMENT

The record in this matter was closed in January 2022, but reopened by the Commission in an order dated July 7, 2022. In that order, the Commission noted that when evaluating an application under Public Act 16 of 1929, MCL 483.1 et seq. ("Act 16"), the Commission

conducts "a qualitative review" to "determine whether construction of the proposed pipeline system is necessary, reasonable, and in the public interest."[1] The Commission stated that its analysis under Act 16 includes consideration of whether (1) the applicant has demonstrated a public need for the proposed pipeline system, (2) the project is designed and routed in a reasonable manner, and (3) the project meets or exceeds current safety and engineering standards.[2]

With respect to the Act 16 analysis, the Commission noted in the July 7 Order that "as part of the analysis conducted under prong (2), the Commission must be able to determine whether the Replacement Project is designed and routed in a manner that alleviates the many complications of maintaining and ensuring the safety of the dual pipelines and that the Replacement Project will significantly reduce or eliminate the environmental risk posed by the dual pipelines to the Great Lakes, which is Enbridge's stated purpose for the Replacement Project."[3] The Commission further noted that "as part of its Act 16 analysis under prong (3), there must be sufficient evidence on the record for the Commission to determine whether the Replacement Project meets or exceeds current safety and engineering standards so as to prevent a release of Line 5 products from reaching the water of the Great Lakes."[4]

The evidence in the record is insufficient for the Commission to conclude that the application satisfies prongs (2) and (3) of the required analysis under Act 16. The persistent safety concerns about the unique design of the proposed project demonstrate that the application

[1] Case No. U-20763, July 7, 2022 Order at 7 (emphasis added); *See also* Case No. U-12334, March 7, 2001 Order at 13 ("[T]he Commission concurs with the ALJ's conclusion that it has broad jurisdiction over the construction and operation of pipeline systems like that proposed by Wolverine. Inherent in that jurisdiction is the power to make a qualitative evaluation regarding whether a proposed system would be safe and in the public interest.") (Citing *Lakehead Pipeline Company v. Dehn*, 340 Mich 25, 64 NW2d 903 (1954)).
[2] July 7 Order at 8.
[3] July 7 Order at 27.
[4] July 7 Order at 45.

fails to satisfy prong (3). And, because of these safety concerns, the proposed project does not accomplish its stated purpose of preventing the release of product from reaching the Great Lakes and, therefore, fails to satisfy prong (2).

I. THE RECORD EVIDENCE FAILS TO DEMONSTRATE THAT THE TUNNEL PROJECT MEETS OR EXCEEDS CURRENT SAFETY AND ENGINEERING STANDARDS SO AS TO PREVENT A RELEASE OF PRODUCT FROM REACHING THE WATERS OF THE GREAT LAKES.

The record is replete with evidence of significant safety concerns such that the Commission cannot conclude that Enbridge has satisfied prong (3) of the Act 16 analysis.

A. The Record Evidence Demonstrates That There Is a Risk of Release of Product From Line 5 Inside the Proposed Tunnel That Could Trigger a Fire and/or Explosion.

During the first phase of the case, Mr. Kuprewicz, a chemical engineer with nearly fifty years of experience in the oil and gas industry, and extensive experience in emergency response and pipeline incident command, identified several concerns about the proposed project including: (1) the possibility of failure at the girth welds and heat-affected zones; (2) the use of Class 1, Division 2 electrical equipment; and (3) the over-reliance on the computational pipeline monitoring system. Mr. Kuprewicz's concerns have been dismissed by Enbridge, remain unresolved, and are a barrier to the approval of this project.

1. *The Evidence Demonstrates That Enbridge Has Failed to Adequately Address Concerns About Abnormal Axial Stress on the Girth Welds and Heat-Affected Zones.*

No one has ever attempted to build a massive concrete tunnel to route a hazardous liquids pipeline underneath the Great Lakes. The experimental design of this Project is significantly flawed. The proposed replacement pipeline segment is "unusual and especially risky" in that it "will be installed on rollers and anchored to the middle of the tunnel."[5] This will permit pipeline

[5] Kuperwicz Direct Testimony on Remand, 17 Tr. 2631.

movement that will place abnormal loading on the pipeline's girth welds and heat affected zones ("HAZs"), which can lead to a pipeline rupture.[6] Enbridge's experts and project plans have failed to adequately address these issues.

Enbridge proposes to use grade X-70 pipe, installed and operated on a set of rollers within a V-shaped tunnel. The grade X-70 pipe has a known and demonstrated risk of failure at girth welds and/or HAZs.[7] One way that this occurs is when the pipe metal matrix within the HAZ is altered, thus affecting its ability to tolerate various abnormal loading stresses.[8] Even in recently built X-70 pipelines, the risk of girth weld and HAZ failures is well-documented. The Pipeline and Hazardous Materials Safety Administration ("PHMSA") has issued advisories relating to this concern with X-70 pipelines, explaining that testing has indicated that the welded pipe "may exhibit variable chemical and mechanical properties by as much as 15% lower than the strength values specified by the pipe manufacturer."[9]

The notion that modern pipelines do not fail is false. The recent failure of the Keystone pipeline offers a cautionary example. Despite a modern installation date of 2011, the X-70 Keystone pipeline failed on December 7, 2022, resulting in an estimated spill of 12,937 barrels of product.[10] A subsequent root cause investigation, which included mechanical and metallurgical analysis of the pipe, revealed that the failure occurred due to "bending stress on the pipe and a weld flaw at a pipe to fitting girth weld. . . ."[11] The weld flaw resulted in a crack "that propagated over time as a result of bending stress fatigue, eventually leading to an instantaneous rupture."[12] This failure occurred while "the pipeline was operating within its operational design

[6] *Id*.
[7] *See* Exh. BMC-43.
[8] Kuperwicz Direct Testimony on Remand, 17 Tr. 2630.
[9] Kuprewicz Direct Testimony on Remand, 17 Tr. 2633.
[10] Exh. BMC-64 at 1.
[11] *Id.*
[12] *Id.*

and within the pipeline design [MOP]," and despite the fact that "welding inspection and testing were conducted within applicable codes and standards . . . ."[13] The girth weld issue with the Keystone pipeline, combined with abnormal loading stresses, ultimately led to a significant rupture.[14]

The serious risk of these well-documented failures in X-70 pipes is present here, especially because of the abnormal loading stress that will be placed on the pipeline's girth welds and HAZs.[15] However, Enbridge and Mr. Godfrey have been dismissive of the threat posed by catastrophic failure at the girth welds or HAZs of this pipe. Mr. Godfrey's analysis fails to account for the unique design and the abnormal loading and stress that pose a serious risk to the pipeline's integrity.

2. *The Evidence Demonstrates That Enbridge Has Failed To Adequately Address Concerns About the Electrical Equipment.*

The presence of electrical equipment within the tunnel poses a threat because such equipment can spark, or otherwise malfunction, providing a source of ignition. In the initial phase of this case, Mr. Kuprewicz testified that the risk of explosion would be better addressed through use of "more stringent Class 1, Division 1 specifications intended to avoid the source of an electrical ignition…."[16] In its July 7, 2022 Order, the Commission stated that "information regarding the feasibility of exceeding the minimum OSHA standards and designing the electrical equipment in the tunnel to Class 1, Division 1 or other methods of reducing the risk of ignition is

[13] *Id.*
[14] Kuprewicz Supplemental Testimony on Remand, 17 Tr. 2648.
[15] Kuprewicz Direct Testimony on Remand, 17 Tr. 2632. When asked in discovery, Enbridge did not identify any other Enbridge pipelines that operate on a set of rollers. *See* Cross Examination of Aaron Dennis, 16 Tr. 2240. Mr. Kuprewicz stated that the proper way to address this is through sound integrity management principles, including going byond the API Std 1104 for girth welding and heat treatment of pipe. Kuprewicz Direct Testimony on Remand, 17 Tr. 2631.
[16] Kuprewicz Rebuttal Testimony, 10 Tr. 1328-1329.

necessary" in order to further evaluate the risk of explosion within the tunnel.[17] Enbridge has not adequately addressed concerns related to the Class 1, Division 2 specifications, and Enbridge has failed to complete a feasibility analysis related to the installation of Class 1, Division 1 equipment within the tunnel.

Enbridge's expert, Dr. John Godfrey, discusses the risk of ignition within the tunnel, but he does not respond to the Commission's specific requests for information about the feasibility of exceeding OSHA standards and for other information about how to lower the risk of ignition within the tunnel. Mr. Godfrey testifies that there is an ignition probability of 1.53×10^{-2}, or more than 1 and ½ out of 100.[18] But Godfrey did not determine the extent to which this probability could be lowered through the use of Class 1, Division 1. Instead of completing a feasibility study, or other assessment, regarding the use of the more-protective Class 1, Division 1 equipment, Mr. Godfrey merely shares his opinion that the use of Class 1, Division 2 equipment in this first-of-its-kind project is acceptable.[19] His opinion has no support and should be provided no weight.

Enbridge also offers Exhibit A-31, which purports to respond to the Commission's request for information about the feasibility of using the more stringent Class 1, Division 1 standard, but, it too, falls short of providing specific feasibility information. The response states, without support, that using Class 1, Division 1 equipment is "inconsistent with the NEC."[20] The response further states that the use of Class 1, Division 1 equipment "may not be feasible," but does not actually offer a feasibility assessment, which is what the July 7 Order requested.

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[17] July 7 Order at 45-46.
[18] Exh. A-29 at 16. This probability directly contradicts Mr. Dennis' testimony that asserts there are "no ignition sources" in the tunnel. *See* 8 Tr. 857 (Q. But your testimony, if I'm understanding correctly, is that there is no chance or zero chance of an ignition source causing a spark within the tunnel; is that correct? A. That's correct.").
[19] Godfrey Direct Testimony, 17 Tr. 2439; Exh. A-29 at 16.
[20] Exh. A-31 at 6.

Additionally, the response claims, without providing any supporting details, that more protective equipment would be "bulkier," "more time-consuming to inspect and maintain," would "perhaps" require a redesign of the tunnel, and that it is "unclear" whether the Tunnel Service Vehicle could be designed to meet this standard.[21] The response includes no specifics regarding the dimensions of Class 1, Division 2 equipment as compared to the Class 1, Division 1 equipment, and it fails to include specifics regarding how much, if any, extra space would be needed or whether it is feasible to accommodate these protective measures.[22]

Mr. Dennis testified that resolving the uncertainty about whether there is adequate spacing within the tunnel to accommodate more-protective Class 1, Division 1 equipment would require a "space-proofing exercise, which is a design exercise to ensure that the equipment fits within the allocated space and that the tunnel can accommodate that as well as provide safe egress and ventilation."[23] This type of exercise was never completed.[24] The record is simply devoid of any evidence that Enbridge made a serious effort to ascertain the feasibility of utilizing Class 1, Division 1 equipment.

3. *The Evidence Demonstrates That Enbridge Has Failed to Adequately Address Concerns About Its Over-Reliance on Its Computational Pipeline Monitoring System.*

Enbridge's Computational Pipeline Monitoring ("CPM") system, even if it functions properly, will not prevent significant amounts of hydrocarbons from accumulating in the tunnel.

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[21] *Id*. at 6-7. Enbridge had nearly a year to assess whether these measures were feasible, yet it offers no explanation as to why it remains "unclear" that the Tunnel Service Vehicle could be designed to meet Class 1, Division 1 standards, or whether any analysis was done to reach this uncertain conclusion.

[22] The response further argues that it is unclear whether potential third-party utilities would meet the more protective standards. *See* Exh. A-31 at 7. This fails for two reasons. First, the proposed replacement segment has priority over any third-party utilities and no such utility may use the tunnel if it's "incompatible with the operation, maintenance or use" of the replacement segment." Exh. A-5 at 10. Second, the notion of third-party utilities is entirely speculative as no third-party utilities have made a commitment to use, or been approved to use, the tunnel.

[23] Cross Examination of Aaron Dennis, 16 Tr. 2184.

[24] *Id.* at 2186.

Enbridge's shut-down procedures are triggered by pressure loss—a drop to 45 psi for more than a minute.[25] By the time alarms are sounded and action is taken, a potentially explosive situation will have been created. For this reason, Mr. Kuprewicz opined that this project requires an automatic shut-down system that will reduce the possibility of an explosive environment within the tunnel.[26]

Furthermore, Enbridge's track record in Michigan with respect to responding to leaks and complying with its own 10-Minute Rule is cause for deep concern. Mr. Richard Adams, Enbridge's Vice President of U.S. Operations, Liquid Pipelines testified before Congress in July 2010.[27] Mr. Adams told Congress that "[O]ur response time from our control center can be almost instantaneous. . . ."[28] Yet, despite these assurances, just ten days later, on July 25, 2010, Line 6B ruptured in Marshall, Michigan. The release went undetected for over 17 hours during which two pipeline startup attempts were performed adding to the oil release volume.[29] From the time of rupture, the alarms cycled through 3 shifts of the control room without anyone addressing the issue.[30] Given this track record, concerns about a potential release within the tunnel should not be brushed aside based on assurances from Enbridge that their CPM and 10-Minute Rule will prevent a catastrophe.

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[25] Exh. S-31 at 12.
[26] Kuprewicz Direct Testimony on Remand, 17 Tr. 2638-39. Pressure loss is an unreliable indicator of a rupture. In the Line 6B spill, multiple alarms were generated due to pressure loss but the control room mis-interpreted the alarms as "erratic pressure" generated during shutdown, not a rupture. See Exh. BMC-58 at 2.
[27] Kuprewicz Direct Testimony on Remand, 17 Tr. 2637-38.
[28] *Id.* at 2638.
[29] *Id. See also* BMC-58, National Transportation Safety Board Accident Report, "Enbridge Incorporated Hazardous Liquid Pipeline Rupture and Release, Marshall, Michigan."
[30] *See* Exh. BMC-58 at 6-7 (identifying shift rotations throughout the 17- hour timespan).

B. The Record Evidence Demonstrates That There Is a Risk of Methane Accumulating in the Tunnel That Could Trigger a Fire and/or Explosion.

Brian O'Mara, a Michigan-based geologist and engineer,[31] testified about the inadequacy of Enbridge's geotechnical investigation that minimized the presence of methane in the Straits. He expressed well-founded concerns that an accumulation of methane poses serious risks during both tunnel construction and operation. Mr. O'Mara is the only witness in these proceedings who has experience with and direct training following an explosive event caused by methane accumulation.[32] Enbridge's expert, Dr. Stanley Vitton, who does not have the same practical tunneling experience,[33] broadly asserted that there was no risk of methane. However, when pressed, even Dr. Vitton would not go so far as to testify that methane will *never* cause an explosion in the Straits, instead offering that "never is a strong word."[34] Indeed, as described below, the evidence establishes that the nature and extent of dissolved methane in the vicinity of the proposed tunnel is undefined, and represents an unmitigated risk of methane that could trigger an explosion during tunnel construction or operation. These concerns have been dismissed by Enbridge, remain unresolved and, like the safety issues addressed above, are a barrier to the approval of this project.

1. *Methane Presents a Risk of Explosion.*

There are two sources of flammable gasses or vapors that will be present in the tunnel project: the product transported through Line 5 and groundwater with dissolved methane that may infiltrate the tunnel.[35] The product transported through Line 5 will, of course, be an always-

[31] *See* O'Mara Direct Testimony on Remand, 18 Tr. 2665-2667; *See also* Exh. BMC-61.
[32] Direct Examination of Brian O'Mara18 Tr. 2690-2691.
[33] Notably, Dr. Vitton's only experience with a Tunnel Boring Machine occurred when he was a student. *See* Cross Examination of Stanley Vitton, 17 Tr. 2534 (noting that "we were just helping" and "it was a novelty.").
[34] Cross Examination of Stanley Vitton, 17 Tr. 2522. *See also Id.* at 2546 ("you can never say never").
[35] O'Mara Direct Testimony on Remand, 18 Tr. 2670.

present threat anytime the line is in operation.[36] The threat of methane may arise during construction activities if dissolved methane is encountered during excavation.[37] After the tunnel is complete, methane may accumulate via constant groundwater infiltration through the joints of the precast tunnel segmented lining, as well as through leaks in the portal and exit shafts.[38]

Methane, at the right concentration in air, indisputably poses a risk of explosion in confined underground spaces. This risk is well-documented in other underground tunnels and shafts.[39] When exposed to an ignition source, methane will ignite between a concentration of only 5 to 15% of methane in the air.[40] And, only a small amount of energy is required to ignite an explosive mixture of methane; to put it in perspective, the spark generated between a person's finger and doorknob after walking across carpeting on a dry day produces *significantly more energy* than required to ignite a methane/air explosion.[41] There are various ways that methane could be ignited within the proposed tunnel project including: equipment could malfunction;[42] a spark could occur during maintenance work;[43] or, by static electricity.[44]

Once ignited, a methane explosion in a confined space like the tunnel project would be like a shotgun blast.[45] This kind of high-pressure event can cause loss of human life, damage to

[36] Line 5 will continue to move 540,000 barrels per day ("bpd"). *See* Pastor Pre-Filed Direct Testimony, 7 Tr. 564.
[37] O'Mara Direct Testimony on Remand, 18 Tr. 2675-2676.
[38] *Id.*
[39] While there are no other hazardous liquids pipelines routed through underground tunnels to turn to for comparison, the risks of methane accumulation are well-documented in other underground tunnels and shafts. Mr. O'Mara referenced a few well-studied examples in his testimony, including: the Milwaukee Deep Tunnel Project, where three workers were killed in a methane explosion, and the Lake Huron Water Tunnel that killed 22 workers. *See* O'Mara Direct Testimony on Remand, 18 Tr. 2677-2678.
[40] O'Mara Direct Testimony on Remand, 18 Tr. 2676
[41] *Id.* (emphasis added)
[42] *Id.*; *See also* Exh. A-29 at 12 (noting that the "electrical equipment are considered to be continuous sources of ignition" and assigning an ignition probability of 1 in 153).
[43] O'Mara Direct Testimony on Remand, 18 Tr. 2676; *See also Id.* at 2677 noting that the explosion in the Lake Huron Water Tunnel was caused when a "steel drill bit sparked and ignited a pocket of methane accumulated in the tunnel."
[44] *Id.*
[45] *Id.*

the tunnel lining and equipment, and a rupture of the pipeline—which in turn can lead to a hydrocarbon-fueled fire.[46]

2. *The Evidence Does Not Support Enbridge's Claim That There Is No Source of Methane in the Straits.*

Enbridge attempted to dismiss the risk identified by Mr. O'Mara by presenting testimony suggesting that his concerns were unfounded on the basis that the geotechnical investigation and scientific research did not identify sources of methane in the Straits. But, as discussed below, Enbridge's expert testimony on these points is not supported by the evidence.

a. The Geotechnical Data Report does not support the conclusion that there are no methane sources in the Straits.

The evidence set forth in the Geotechnical Data Report ("GDR"), a compilation of data gathered during Enbridge's geotechnical investigation,[47] does not support Dr. Vitton's sweeping conclusion that "there are *no methane sources* within the area of the tunnel that could lead to methane levels remotely capable of reaching explosible methane levels."[48] Rather, the GDR falls well short of industry standards, relies on an insufficient number of samples, and the laboratory results are, at best, inconclusive.

Only a small number of borings were obtained from the locations through which the Tunnel Boring Machine will pass. In fact, of the total borings, only ten were drilled to the proposed tunnel depth.[49] Data collected from the tunnel depth is key because it represents the

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[46] *Id.*
[47] *See generally* Exh. MM4. Note that Enbridge has not provided for review its Geotechnical Baseline Report (GBR), a document that interprets the data in the GDR and includes sufficiently more geotechnical information, despite its relevance in these proceedings.
[48] Vitton Rebuttal Testimony on Reopening, 17 Tr. 2465 (emphasis added).
[49] Redirect Examination of Brian O'Mara, 18 Tr. 2754-2755; *See also* McMillen Jacobs Technical Memorandum dated January 13, 2021 (hereinafter "Geotechnical Investigations Memorandum") at pages 5-6; 10. (https://www.michigan.gov//media/Project/Websites/egle/Documents/MultiDivision/Line5/MDOT_Question_on_Geotechnical_Investigation_Jan_2021.pdf?rev=2fe08f3e6cf64563869bf19780b1ccac) (last accessed May 2, 2023).

actual geological conditions within which the tunnel will be constructed and operated.[50] Because only ten samples were taken within the tunnel alignment, there are significant portions of the alignment where the conditions have not been investigated.[51] The ten borings *at tunnel depth* resulted in an average spacing of borings across the Straits of approximately 2,100 feet which is far short of industry standards.[52]

In addition, Enbridge's GDR indicates that a total of 24 samples were collected for the laboratory to test for the presence of methane or other hazardous gases.[53] Yet, 23 of those 24 samples—*all but one*—were flagged as having quality control issues. Some were either not preserved properly, some were not tested in a timely manner (i.e. they exceeded the laboratory method holding time), some exceeded the maximum allowed temperature and some failed other laboratory quality control parameters.[54] The quality control issues related to the groundwater sample analyses in the GDR render the results useless for the purpose of concluding that methane will not be encountered during tunnel construction or operation.[55] Yet, Dr. Vitton testified that he was not aware of, and therefore did not consider, any of the quality control issues with the samples.[56] Simply put, the data obtained from Enbridge's geotechnical investigation

[50] Redirect Examination of Brian O'Mara, 18 Tr. 2754 ("[A]ny tunnel that's going to be successful has to have a proper characterization to support the design; that means you have to do enough borings and do enough testing to understand what you're likely to encounter.").
[51] Redirect Examination of Brian O'Mara, 18 Tr. 2754-2755 (noting that Boring number BH19-24, which is the boring representing the deepest part of the Straits, did not even encounter rock); Exh. MM4 at 34 (Table 5.4: Deepwater Drilling Program identifying N/A at the rock depth drilled for BH19-24); *See also* Geotechnical Investigations Memorandum at 3.
[52] Redirect Examination of Brian O'Mara, 18 Tr. 2744-2755 ("The recommended [frequency] for the geology here would be anywhere from 50 feet to 500 feet if you had ideal conditions, and we certainly don't have ideal bedrock conditions here."); *See also* Geotechnical Investigations Memorandum at 6, 10.
[53] Exh. MM4 at 2500-2501; *See also* Redirect Examination of Brian O'Mara, 18 Tr. 2757.
[54] Redirect Examination of Brian O'Mara, 18 Tr. 2757; *See also* Exh. MM4 at 2497-2625; *Id.* at 2582 (indicating a broken vial). For the Commission's convenience, the relevant laboratory reports are attached hereto as Appendix A.
[55] The quality control issues likewise render the conclusions in Exh. S-37 useless since Delve (formerly McMillan Jacobs) relied on the GDR in assuming for purposes of its calculations that the maximum measured methane concentration of 11 microgram per liter.
[56] Cross Examination of Stanley Vitton, 17 Tr. 2534 (Q. Are you aware of any of the results of those borings being flagged or qualified by the laboratory? A. No, no.); *Id.* at 2536 (Q. Based on your review of the GDR, are you aware

does not support the claim that there is no methane in the Straits and Dr. Vitton's opinion on this issue should be provided no weight.

b. Scientific Research indicates that there are sources of methane in the Straits.

Enbridge's evidence about the geology in and around the Straits is similarly unsupported. Enbridge's expert, Dr. Vitton, broadly claimed that the "lack of methane in these samples is because there are *no underlying gas deposits* under the Straits of Mackinac in which fossil micro-seepage of methane gas can occur." [57] And he stated that the complete lack of methane in the Straits is "supported by scientific research."[58]

Dr. Vitton is wrong. Fossil methane emissions—i.e., methane from deep underground sources—are a threat to construction and operation of the tunnel project because methane rises and moves through geological formations, always seeking a way upward.[59] In rendering his opinion that there are no sources of methane in the Straits, Dr. Vitton failed to consider a study conducted by the United States Geological Survey, published in June of 2020, that concluded there *is* a significant oil and gas reserve directly situated under the Straits.[60] Instead, Dr, Vitton based his opinion on a study that looked at methane in surface water samples largely outside the area of the proposed tunnel. But the presence or absence of methane in surface water samples has little bearing on the presence or absence of methane in geological formations underlying the Straits. Dr. Vitton offered no explanation as to why he views water column samples, some taken hundreds of miles away from the proposed tunnel, as more relevant than a government report

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of any of the results from the lab that were flagged as invalid based on the temperature that they were held in? A. No, I'm not aware of that); *Id.* at 2536 (Q. Are you aware of any lab results, based on your review of the GDR, where it was indicated that the sample was held for too long to reach a valid result? A. No, I am not aware of that.).

[57] Vitton Rebuttal Testimony on Reopening, 17 Tr. 2465 (emphasis added).

[58] *Id.* at 2469.

[59] Cross Examination of Stanley Vitton, 17 Tr. 2545; Redirect Examination of Brian O'Mara, 18 Tr. 2760.

[60] *See* Exh. BMC-70.

describing known shale oil and gas deposits beneath the location of the proposed tunnel. Again, Dr. Vitton's testimony is unsupported and should be disregarded.

C. The Record Evidence Demonstrates That There Is a Risk That a Fire and/or Explosion Could Cause the Concrete Structure to Fail, Allowing Product From Line 5 to Reach the Great Lakes.

The Commission specifically noted in its July 7 Order that, "there is no information on the record regarding the concrete's ability to withstand the effect of a high-pressure air impact from an explosion."[61] Enbridge filed its witnesses' direct testimony on October 21, 2022, but did not address the Commission's observation about lack of evidence regarding the concrete's ability to withstand a high-pressure event.[62] Bay Mills, in contrast, did address this issue. And, as detailed above, the evidence demonstrates that an explosion within the enclosed underground tunnel structure could cause the concrete tunnel structure to fail.

The amount of product that could flow into the tunnel in a worst case scenario would be considerable.[63] Following a rupture, any ignition event, as described above, has the potential to create a massive hours-long hydrocarbon-fueled fire.[64] When a fire in an enclosed concrete tunnel reaches a certain temperature the concrete will experience violent or explosive spalling, where pieces of concrete separate from the concrete surface.[65] Eventually, as the spalling continues, the underlying steel structure is exposed to the fire, causing it to buckle and fail,

[61] July 7 Order at 45.
[62] Following Enbridge's silence on this issue, the MPSC Staff served a discovery request on Enbridge requesting the same information about the concrete's ability to withstand the impact of a high-pressure event. Enbridge objected and stated, in short, that the Commission did not ask for the information and it was not going to provide it. *See* Exh. BMC-62.
[63] By way of comparison, the Keystone XL pipeline that recently failed in Kansas and spilled 12,937 barrels. *See* BMC-64. Enbridge's Line 6B spill in Marshall Michigan spilled 843,444 gallons of crude oil (20,082 barrels.) *See* Exh. BMC-58.
[64] Kuprewicz Rebuttal Testimony, 10 Tr. 1329-1330.
[65] O'Mara Direct Testimony on Remand, 18 Tr. 2671.

triggering a collapse or "pancake failure."[66] In his testimony, Mr. O'Mara identified noteworthy examples of this well-studied reaction of concrete and steel.[67]

In response, Staff witness Daniel Adams suggests that the tunnel will withstand the effects of a hydrocarbon fire, relying on the fact that the tunnel lining will be laboratory tested using the Rijkswaterstaat ("RWS") fire curve.[68] The RWS fire curve is used to determine the performance of concrete linings simulating a road tunnel fire.[69] The test simulates a high-heat fire to determine the temperature penetration in the lining and observe whether or to what extent spalling occurs.[70] However, the RWS fire curve has its limitations. It tests tunnel linings based on the conditions that were experienced in the Gotthard Tunnel Fire: a maximum temperature of 1200 degrees Celsius for 180 minutes.[71] The performance of concrete lining in a fire that lasts for a longer duration or higher temperature is untested. This is a significant qualifier. A fire in the proposed tunnel—transporting liquid hydrocarbons instead of vehicles—may very well experience conditions that far exceed the conditions of the RWS fire curve test.[72]

D. The Record Evidence Demonstrates That There Is a Risk of Product Entering the Great Lakes Following a Collapse of the Tunnel Lining

Earlier in these proceedings, Mr. Kuprewicz was asked by counsel for the MPSC Staff whether, "for Line 5 product to escape the tunnel and reach the Straits of Mackinac following an

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[66] *Id.* at 2671-2672.
[67] *Id.* at 2672-2673.
[68] Adams Reopened Record Rebuttal Testimony, 17 Tr. 2570-2571; Cross Examination of Daniel Adams, 17 Tr. 2576-2582.
[69] *Id.*
[70] *Id.*
[71] *Id.*; *See also* O'Mara Direct Testimony on Remand, 18 Tr. 2672.
[72] Enbridge stated it could lose up to 2 percent (approximately 460,000 gallons) of the product shipped before a release was detected using their pressure and flow monitoring approach. *See* O'Mara Direct Testimony on Remand, 18 Tr. 2674-2675. An ignition of that amount of product would result in a fuel-rich fire that could burn for days, not hours, particularly because Enbridge's fire suppression plan, which consists of only sealing off the ends of the tunnel to let the fire burn out, is inadequate to address a fire in a large, enclosed space. *Id*. During the entire time that the fire is being passively suppressed through closing off the tunnel, the tunnel structure itself would be vulnerable to the intense heat of the fire and subsequent spalling and collapse. *Id.*

explosion or a fire, the product would need to overcome the hydrostatic pressure[73] outside of the tunnel and migrate into the geology surrounding the tunnel."[74] Mr. Kuprewicz testified in response that he did not opine on the hydraulic issues in his testimony because he was not a geologist.[75] Enbridge, on remand, did not provide a response to the question posed by Staff; Bay Mills, on the other hand, did. Brian O'Mara opined that an explosive event or fire within the tunnel could result in a localized collapse of the tunnel lining and secondary containment, as described above. If the Line 5 product was being pumped at its operating pressure, the product would then escape the confines of the tunnel and migrate into the surrounding rock and sediment and ultimately reach the water of the Straits of Mackinac.[76]

Again, instead of addressing the concerns raised by Bay Mills' expert, Enbridge's response was that the concerns were never going to materialize. However, Enbridge's "tunnel explosion study," submitted by Dr. Ferrara in response to O'Mara's testimony, should be provided no weight. The study relied on calculations derived from Mr. Godfrey's POF Analysis, which is unreliable for the reasons stated below. Additionally, Dr. Ferrara claims to have based his analysis on a worst-case scenario, but Mr. O'Mara testified about the numerous ways in which Mr. Ferrara's model is not representative of a worst-case scenario. Mr. O'Mara notes that the study fails to evaluate an explosion following a release from a full bore rupture, which could

[73] Hydrostatic pressure is the downward force exerted by gravity from the water, sediment and rock present above the proposed tunnel. The pressure is different at varying points in the proposed tunnel elevation. For example, the hydrostatic pressure is going to be the highest at the lowest depth of the tunnel compared with the pressure that would be present at either end of the tunnel. *See* O'Mara Direct Testimony on Remand, 18 Tr. 2679.
[74] O'Mara Direct Testimony on Remand, 18 Tr. 2678; *See also* Cross Examination of Richard Kuperwicz, 10 Tr. 1395.
[75] *Id.*
[76] See O'Mara Direct Testimony on Remand, 18 Tr. 2679. Notably, the hydrostatic pressure at the deepest part of the tunnel was calculated to be 17 bar, which is roughly equivalent to 250 psi. *Id.* at 2680. To overcome the hydrostatic pressure at the deepest elevation, the product would need to be released from the tunnel at a pressure that exceeds 250 psi. By way of comparison, the pressure of a fire hose is typically 116-290 psi, far less than the operating pressure of Line 5. This would happen based on the normal operation of the pipeline. *Id.*

lead to spalling, rather than a release, from a pin hole sized failure. The study also assumes the tunnel is level and only 1000 feet long, rather than a V-shaped design that is 4 miles long. Dr. Ferrara's study further ignores the potential for methane in groundwater to enter the tunnel.[77]

Because Enbridge failed to consider a worst-case explosion and/or fire scenario, it did not adequately evaluate the potential of Line 5 product to leave the confines of the tunnel and migrate into the water of the Straits. Product forced out of the tunnel will migrate upward and continue to rise until it breaks through the lakebed sediment and enters the water column.[78] Once in the water column, the product will rise as distinct separate light non-aqueous phase liquid globules and float to the surface and/or be moved by lake currents, waves, and wind.[79] In addition to the migration of the mobile product, there would be an immobile fraction that would remain stuck in the rock and sediments and slowly dissolve into the groundwater, and ultimately the water column, for decades or possibly centuries.[80] A release from the tunnel would cause a long-term source of pollution in the Straits.[81]

II. THE EVIDENCE FAILS TO DEMONSTRATE THAT THE TUNNEL PROJECT FULFILLS THE ALLEGED PURPOSE OF REDUCING OR ELIMINATING THE ENVIRONMENTAL RISK POSED BY THE DUAL PIPELINES.

As the preceding discussion of the evidence related to prong (3) of the Act 16 analysis highlights, there are significant safety-related concerns with the proposed tunnel project. These concerns also directly relate to prong (2) of the Commission's Act 16 analysis—i.e., whether the proposed tunnel will significantly reduce or eliminate the environmental risk posed by the dual pipelines. Indeed, considering the depth of concern about the proposed design of the tunnel

[77] O'Mara Direct Testimony on Remand, 18 Tr. 2678-2682.
[78] *Id.*
[79] *Id.*
[80] *Id.*
[81] *Id.*

project and the possibility for a catastrophically destructive event should there be a fire and/or explosion, the proposed tunnel project is simply replacing one set of risks for another. Nevertheless, Enbridge offers two probability analyses based on quantitative risk assessment to suggest that there is a very low likelihood that a fire or explosion could occur in the tunnel.[82]

As discussed below, however, the probability analyses offered by Enbridge through the testimony and exhibits of Mr. Godfrey and Mr. Bott are unpersuasive and should be disregarded because the facts and data upon which they rely are not in evidence and the analyses do not consider worst case scenarios. Furthermore, the use of quantitative risk assessment to dismiss identified risks during a permitting process is dangerous because it invites complacency and creates a false sense of safety. Finally, the potentially catastrophic impact that a fire or explosion in the tunnel would have on the Great Lakes—an impact that would have a particularly devastating impact on Bay Mills and other tribal nations—counsels against relying on unsupported and incomplete probability analyses in the Commission's consideration of prong (2) of the Act 16 analysis.

A. Enbridge's Probability Analyses Should Be Stricken or Disregarded Because the Facts and Data Upon Which They Rely Are Not in the Record.

1. *The Testimony and Exhibits of Mr. Godfrey and Mr. Bott Do Not Satisfy the Evidentiary Requirements of the Michigan Rules of Evidence.*

The testimony and exhibits of Messrs. Godfrey and Bott fail to comply with the requirements of the Michigan Rules of Evidence ("MRE") pertaining to expert testimony (specifically, Rule 702 and 703), and Bay Mills objected to the admission of the testimony and exhibits on that basis.[83] The ALJ denied the objections and admitted the testimony and exhibits

[82] *See* Exh. A-29; Exh. A-32.
[83] *See* Bay Mills Indian Community's Mtn. to Strike John Godfrey's Test. and Exh. A-29, March 29, 2023; Bay Mills Indian Community's Mtn. to Strike Steven Bott's Test. Filed on March 10, 2023, April 11, 2023; Bay Mills Indian

into the record. On April 25, 2023, Bay Mills filed its Application for Leave to Appeal April 11 and 12, 2023 Rulings Admitting Evidence Into the Record, and, incorporates by reference herein, the arguments made in the brief filed in support of its application.

Bay Mills incorporates herein all arguments made to strike the testimony and Exhibit A-29 offered by Enbridge's expert, John Godfrey, in Bay Mills' motion to strike filed on March 29, 2023[84] and in oral argument by Bay Mills' counsel on April 11, 2023.[85] Bay Mills further incorporates herein all of its arguments to strike the testimony and exhibit of Steven Bott presented in oral arguments made on April 11, 2023, and in its oral motion to strike Mr. Bott's testimony and Exhibit A-32 on April 12, 2023.[86] For the reasons previously stated in its written motions and oral arguments, the testimony and exhibits of Messrs. Godfrey and Bott should be stricken from the record.

Even if the Commission does not agree that the challenged testimony and exhibits should be stricken, the evidentiary deficiencies in the two probability analyses suggests they should be given no weight in the Commission's consideration of this matter.

2. *Mr. Godfrey's POF Report Should Be Given No Weight Because Its Conclusions Are Not Supported by Facts and Data.*

Mr. Godfrey's POF Report is utterly lacking in the underlying facts and data that form the basis of his opinions. Mr. Godfrey's report indicates that he consulted several databases to calculate the probability of failure for each of the five failure scenarios he selected. With respect to Scenarios 1 and 2, he identified "1 failure" in the Bureau of Ocean Energy Management

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Community's Oral Arg. on Mtn. to Strike John Godfrey's Test. and Exh. A-29, 15 Tr. 2030-2038; 2048-2052; 2055, April 11, 2023; Bay Mills Indian Community's Oral Arg. on Mtn. to Strike Steven Bott's Test. Filed on March 10, 2023, 16 Tr. 2370-2372.

[84] *See* Bay Mills' Mtn. to Strike John Godfrey's Test. and Exh. A-29, March 29, 2023.

[85] *See* Bay Mills' Oral Arg. on Mtn. to Strike John Godfrey's Test. and Exh. A-29, 15 Tr. 2030-2038; 2048-2052; 2055, April 11, 2023.

[86] *See* Bay Mills' Oral Arg. on Mtn. to Strike Steven Bott's Test. Filed on March 10, 2023, 16 Tr. 2370-2372.

("BOEM") data for liquid releases from 1972 to 2017 that he deemed relevant. His testimony and report do not identify the failure or provide any information about it. He does not identify the operator, the year of the incident, or the magnitude of the release. It is simply impossible to determine whether the data point upon which Mr. Godfrey relies has any bearing on the safety of Enbridge's proposed tunnel. Furthermore, Mr. Godfrey states that, with respect to Scenarios 1 and 2, he also consulted three European data sources: Data from Pipeline and Riser Loss of Containment (PARLOC) 2001 (which he states has information about failures in the United Kingdom, Netherlands, and Denmark prior to 2001); PARLOC data for the United Kingdom from 2001-2012; and Norwegian Continental Shelf ("NCS") data for "selected" operators in Norway from 2001-2012. Mr. Godfrey does not disclose what data he reviewed from each of these sources.[87] Aside from the fact that these books are not readily accessible to Bay Mills nor the Commission, Mr. Godfrey provides no internal citations to these books.

With respect to Scenarios 3, 4, and 5, Mr. Godfrey states that he identified failures for the probability calculation for each scenario by consulting the Pipeline and Hazardous Materials Safety Administration ("PHMSA reportable incident database. Mr. Godfrey states that he deemed "one failure" relevant for Scenario 3, "three failures" for Scenario 4, and "two failures" for Scenario 5. But Mr. Godfrey discloses no information about the failures he deemed to be relevant to his analysis—no information about the date of the incident, the operator, or the nature and magnitude of any release. As a result, it is impossible to assess Mr. Godfrey's analysis and conclusions.

[87] In discussing the PARLOC data, Mr. Godfrey cites to two reference books: PARLOC 2001—*The Update of Loss of Containment Data for Offshore Pipelines 5th Edition*, Energy Institute, 2003, and PARLOC 2012—*Pipeline and Rise Loss of Containment 2001-2012* 6th Edition, Energy Institute, and Oil & Gas UK, March 2015. He provides no internal citations to information in these books, and they were not made a part of the record in these proceedings.

Mr. Godfrey also calculated the probability of ignition within the tunnel using a MISOF ignition model. He does not, however, provide the model he used. Instead, he simply provides a footnote citation to a MISOF Report for Norwegian Oil and Gas Association. Here again, Mr. Godfrey's calculation of a mathematical probability is not supported by any actual numerical data.

Mr. Godfrey's information about the FMEDA workshop, the consideration of over thirty-five failure scenarios, and the selection of only five scenarios for further analysis is similarly lacking in any facts and data. Mr. Godfrey states that Enbridge's "construction standards" and "integrity management program" were "considered," but he fails to explain how. In addition, Appendix A of his report, which lists the over-thirty scenarios, offers at best a cursory explanation as to why most scenarios were deemed unworthy of a probability analysis and, for some scenarios, there is simply no explanation at all.

Furthermore, cross-examination of Enbridge employee Mr. Bott revealed that Mr. Godfrey did not mention, let alone include, relevant facts and data in his testimony and report that he requested be provided by Enbridge. Mr. Bott testified that he provided (through his legal counsel) a "relevant failure history"[88] to Mr. Godfrey for use at the FMEDA workshop that formed the basis for Mr. Godfrey's analysis. Nothing that Mr. Bott provided to Mr. Godfrey, including the Failures Record Database or the Omega Database, or any subset of information gleaned from those databases, was entered into the record. This information was not disclosed by Enbridge, or Mr. Godfrey, through its pre-filed testimony, exhibits, or discovery responses. It only became known during the evidentiary hearing that Mr. Bott had provided Mr. Godfrey with

[88] Cross Examination of Steven Bott, 16 Tr. 2342-2343.

a "spreadsheet of failures," obtained from Enbridge-maintained databases.[89] Yet, the "spreadsheet of failures" is not in the record.

Finally, Mr. Godfrey adjusts his entire probability conclusion downward by an entire order of magnitude[90] because "the failure frequencies calculated using the PHMSA database and other failure data sets is considered conservative because it is unknown what measures were in place to prevent those failures form occurring."[91] Mr. Godfrey then touts the fact that Enbridge has "a pipeline design and IMP program that is aimed at preventing many of these mechanisms from occurring as well as detecting them, should they occur."[92] In essence, because Mr. Godfrey does not know what safety measures other operators had in place at the time of the historical failures he considered, he seemingly gives those operators no credit for having any. In contrast, because he reveres the measures his own client has in place, he decides to adjust his math in Enbridge's favor by an entire order of magnitude.

3. *Mr. Godfrey and DNV Lack Credibility.*

Mr. Godfrey's tipping of the scales in Enbridge's favor seems even more egregious when one considers the lack of objectivity of Mr. Godfrey's employer, DNV. Mr. Ray Philipenko, Enbridge's Director of TIS Pipeline Control Systems and Leak Detection, testified that DNV's software was used to build Enbridge's Material Balance System ("MBS"), which he described as Enbridge's "primary computational pipeline monitoring system."[93] He further testified that DNV's software has formed the basis of the MBS for over twenty-five years and that DNV provides software support to Enbridge.[94] He also stated that Enbridge has a perpetual software

[89] *Id*. at 2347-2348.
[90] Mr. Godfrey adjusts his probability calculation from $3.77x10^{-6}$ to $3.77x10^{-7}$. *See* Exh. A-29 at 7.
[91] *Id.*
[92] *Id.*
[93] *See* Cross Examination of Ray Philipenko, 16 Tr. 16 2282-84.
[94] *See Id.* at 2284-85.

license agreement with DNV and pays DNV an annual support fee.[95] Thus, when Mr. Godfrey reduced his probability of failure calculation by an entire order of magnitude, in part because of Enbridge's ability to detect leaks through its CPM system, he was doing so as an employee of the company that licenses to Enbridge the software that forms the basis for that system. Thus, Mr. Godfrey's analysis can hardly be considered objective when it adjusts—with no mathematical basis—a probability calculation because of Enbridge's use of his own company's software.

And there are further concerns about DNV's objectivity. In 2016, the State of Michigan entered into a contract with DNV to perform an independent risk analysis for the dual pipelines.[96] Before the analysis was completed, however, the State terminated the contract with DNV for cause[97] A DNV employee who was working on the project for the State was also performing work on behalf of Enbridge.[98] The firing of DNV by the State for a conflict of interest and a violation of the conflicts and ethics provision of the contract was widely reported at the time.[99]

When DNV's lack of objectivity and judgement with respect to Enbridge and Line 5 is considered in combination with an expert analysis that is utterly lacking in the factual support required by the evidentiary rules, it is apparent that Mr. Godfrey's testimony and report should be given no weight.[100]

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[95] *See* Cross Examination of Ray Philipenko, 16 Tr. 2286.
[96] Cross Examination of Travis Warner, 17 Tr. 2804.
[97] *Id.*
[98] *Id.* at 2805.
[99] *See* Garret Ellison, *Line 5 risk study spiked at last minute over conflict of interest violation*, MLIVE (June 21, 2017, 3:55 PM), available at https://www.mlive.com/news/2017/06/line_5_det_norske_veritas_cont.html; Garret Ellison, *Line 5 contractor fired by state was doing federal work for Enbridge*, MLIVE (June 22, 2017, 11:53 AM), available at https://www.mlive.com/news/2017/06/dnv_enbridge_line_5_study_coi html. The termination letter is available at: https://mipetroleumpipelines.org/sites/mipetroleumpipelines.org/files/document/pdf/Termination%20of%20DNV%20GL%20as%20Independent%20Contractor%20for%20Line%205%20Risk%20Analysis.pdf.
[100] Although the ALJ denied Bay Mills' motion to strike Mr. Godfrey's testimony and report, he stated: "This was not a clearcut motion as far as my reading of it was concerned, I think that both parties have presented compelling

4. *Mr. Bott's "One in One Million" Probability Analysis Should Be Given No Weight Because the Analysis Is Not Supported by Facts and Data.*

Enbridge fares no better with the "one in one million" probability analysis offered by Mr. Bott. Mr. Bott based his probability analysis on four prior Enbridge releases. He testified that he relied on the following Enbridge-owned, non-public databases to reach the conclusions in his report:

- Enbridge's Failures Record Database, a database of Enbridge-specific pipeline releases in both Canada and the United States;
- The Omega Database, which details specifications about Enbridge pipelines; and,
- Enbridge written standards, including the Pipeline Integrity Reliability Analysis process, or PIRA Process. [101]

Because Mr. Bott did not include in his testimony and exhibit the information he obtained from non-public data sources, the record does not include the following information:

- Facts and analysis to support Mr. Bott's inclusion of the June 22, 2013 release, the March 11, 2016 release, the February 27, 2017 release, and the January 9, 2018 release identified in Table 1 including, but not limited to, the specific location, any other relevant causes beyond the stated "primary cause," and the analyses performed to determine whether the release is applicable to the tunnel conditions;
- Facts and analyses to support the *exclusion* of any other Enbridge release during the stated timeframe; and
- The actual location of the stated 10,000 km of transmission pipeline relied on in the calculation, including the geographic location (i.e., Canada and/or the United States) and the environmental location (i.e., buried pipe, above-ground, in water).

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arguments in this matter and, frankly, I do agree with Bay Mills' position that there are some issues in relation to some of the data and the facts that are relied upon in terms of not being abundantly clear . . . ." 15 Tr. 2060.

[101] Cross Examination of Steven Bott, 16 Tr. 2336 (describing the "failures record database" as a non-public document); *Id.* at 2339-2340 (describing the Omega Database which is non-public); and *Id* at 2340-2341 (describing Enbridge written standards as "Enbridge-controlled" documents).

Notably, Mr. Bott's analysis does not include any documents contemporaneous with the "one in one million" calculation. Instead, he created a document after the fact to attempt to buttress the previous testimony from Mr. Dennis.

With respect to the "one in one million" calculation, nothing has changed since the Commission reopened this matter with the observation that the parties and the Commission are unable to review Enbridge's calculation because Enbridge did not provide record evidence of the data and methodology used to make the calculation. Enbridge still has not provided sufficient data and information to calculate the risk of release, and the parties and the Commission are still unable to assess the validity of Enbridge's analysis. Neither the Commission nor the public can have confidence in an assessment of risk of the proposed project based on conclusory statements based on information buried within Enbridge-owned databases.

B. Enbridge's Attempts to Quantify the Risks Presented by the Tunnel Project Fail to Account for All Possible Failure Scenarios--Particularly Worst Case Scenarios.

Another problem with Enbridge's probability analyses is that they do not address all possible failure scenarios. Here again, it is noteworthy that the participants in the FMEDA workshop identified over thirty failure scenarios, but Mr. Godfrey conducted a probability analysis for five scenarios. Some of the scenarios that were disregarded include: installation damage; vandalism; weather-related events, including floods and lightning strikes; and seismic activity.[102] While any one of these scenarios might present a relatively low risk, they each should be thoroughly evaluated to have a comprehensive understanding of the ways in which the proposed tunnel is vulnerable. Instead, Mr. Godfrey tosses them aside with nary an explanation.

Furthermore, none of the Enbridge analyses of the risks presented by the tunnel address the worst-case scenario—a full bore rupture or other high-rate-of-release event inside the tunnel.

[102] Exh. A-29, Appx. A.

In discussing how long it would take for Enbridge to detect a release and the dispersion modeling for a potential release of natural gas liquids, Mr. Godfrey assumes a hypothetical 0.315-inch hole in the pipeline.[103] As Mr. O'Mara testified, this is *not* the worst-case scenario:

> [T]he worst-case scenario for this pipeline isn't the size of a pencil or pinhole, I'm saying the worst-case scenario is you have a full bore rupture that's the full 30-inch diameter. Then you look at, well, how much gas could come out of that full bore rupture, and then you model that release . . . you don't model the release of a pencil hole and say this is the worst-case scenario. . . .[104]

Obviously, a full bore rupture or other high-release event will lead to far more product being released into the tunnel than a release from 0.315-inch hole.[105] Indeed, under a true worst case scenario, a large amount of oil, NGLs and/or flammable gases would accumulate within the confined tunnel within a matter of minutes, setting the stage for the type of explosive event described by Messrs. Kuprewicz[106] and O'Mara.

C. Enbridge Inappropriately Attempts to Quantify the Risks Presented by the Tunnel Project During a Permitting Approval Process.

The glaring problems in Enbridge's probability analyses reinforce Mr. Kuprewicz's opinion, based on his involvement investigating gas and liquid transmission pipeline failures,[107] that the use of quantitative risk analysis in these proceedings is inappropriate and dangerous. Mr. Kuprewicz testified that quantitative risk analysis is "not part of our federal regulatory scheme."[108] He stated:

> In practice, an approach that quantifies the risk of an event—here, the failure of the pipeline within the tunnel—creates what I refer to as a "kill threshold," or a

[103] Exh. A-29 at 8.
[104] Cross Examination of Brian O'Mara Cross, 18 Tr. 2739.
[105] By way of comparison, the ruptured segment in Line 6B measured 6 feet 8.25 inches long and up to 5.32 inches wide. *See* Exh. BMC-58 at 3.
[106] Mr. Kuprewiz testified: "Enbridge's reliance on the 10-Minute Rule is short-sighted, ignores a history of noncompliance with its own Rule and ignores…***that within those 10 minutes—or longer—product will continue to quickly flow through the rupture leading to the explosive conditions that I described in my previous testimony***." Kuprewicz Direct Testimony on Remand, 17 Tr. 2639 (emphasis added).
[107] Exh. BMC-50 at 1.
[108] Kuprewicz Direct Testimony on Remand, 17 Tr. 2628.

> prescriptive limit on the amount of death or destruction caused by an event. There is no such limit or threshold established in U.S. federal pipeline regulations.[109]

But contrary to the characterization of his testimony by other witnesses, Mr. Kuprewicz did not opine that quantitative risk analysis cannot or should not ever be used. Rather, his concern is with the use of quantitative risk analysis here, *at the permitting stage* of this project. In essence, Enbridge is using quantitative risk analysis to downplay the identified risks posed by their design so that the risks seem nonexistent. This is what Mr. Kuprewicz refers to as "Space Shuttle Syndrome," which he describes as "what occurs when people ignore or underestimate risk to drive to a preordained decision to the point where they dismiss or ignore very real risk in favor of going forward with a project."[110]

D. Enbridge's Attempts to Quantify the Risks Presented by the Tunnel Project Fail to Account for the Devastating Consequences of a Catastrophe.

It is axiomatic that consideration of the consequences of an event must be part of a risk assessment. Yet, Enbridge gives no attention to the potentially catastrophic consequences of a pipeline failure within the tunnel. Instead, its analyses only offer mathematical conclusions, without supporting facts and data, suggesting that the likelihood of certain failure events is quite small. The intention is clear: Enbridge wants the Commission to dismiss any concerns about the identified risks by concluding that they are unlikely to occur.

But low risk is not no risk and, therefore, it is imperative that a risk assessment of the proposed tunnel design consider the consequences of a failure. Bay Mills' President Whitney Gravelle provided testimony about the impact a catastrophic event would have on the tribe, a key aspect missing from Enbridge's analyses:

> A release from the pipeline or an explosion inside the tunnel would be terrifying. It would have a profound and long-lasting impact on Bay Mills because it would

[109] *Id.*
[110] *Id.* at 2643.

> cause catastrophic damage to the waters of the Straits of Mackinac, Lake Michigan and Lake Huron. Such damage would cause incalculable harm to the citizens of Bay Mills who depend on the waters in and around the Straits for their economic livelihood, their quality of life, their cultural and aesthetic wellbeing, and their existence. An explosive event in the proposed tunnel would, quite literally, be an assault on our entire way of life.[111]

President Gravelle also noted that Enbridge's assurances that something is unlikely to happen are particularly alarming given the history of pipeline failures in this country:

> While Mr. Godfrey's probability analysis relies on historical data sets that minimize the risks associated with the tunnel, my consideration of history points to the opposite conclusion. The history of pipeline operations in this country is replete with examples of ruptures, leaks and explosions that have had devastating impact. Undoubtedly, these events were regarded as highly unlikely to happen. And, too often, indigenous people bear the brunt of such accidents.[112]

As President Gravelle states, Enbridge's assurances of safety as communicated through its probability analyses should be viewed with deep skepticism, particularly considering the flimsy evidentiary foundation upon which they rest. Enbridge's testimony in these proceedings regarding risk are nothing more than an echo of Enbridge's assurances to Congress just days before the Line 6B rupture.[113]

When one considers the potential for an explosion and hydrocarbon fire in an underground *never-before-built* tunnel running through the Straits of Mackinac, and the potentially devastating consequences such an event would have on those most affected, it becomes apparent that the stakes are too high and the risk too great. Enbridge's application should be denied.

[111] Gravelle Direct Testimony on Remand, 17 Tr. 2609.
[112] *Id.* at 2611-12.
[113] Kuprewicz Direct Testimony on Remand, 17 Tr. 17 2638.

CONCLUSION

Based on the record evidence submitted in both phases of this contested case, and for the reasons stated above, and in the initial brief and response brief submitted by the Tribal Intervenors[114] at the conclusion of the initial phase of these proceedings, the Bay Mills Indian Community respectfully requests that the Commission **deny** Enbridge's application to construct and operate the project.

May 5, 2023

Respectfully Submitted,

By: */s/ Christopher R. Clark*

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[114] At the conclusion of the first phase of the case, four tribal intervenors (the Bay Mills Indian Community, the Little Traverse Bay Bands of Odawa Indians, the Grand Traverse Bay Band of Ottawa and Chippewa Indians, and the Nottawaseppi Huron Band of the Potawatomi) collectively filed an initial brief and response brief detailing their arguments in opposition to the application.

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Appendix A

Excerpted Pages From Exhibit MM4

Appendix A

“Temperature Exceeded the Maximum Criteria”

Fibertec environmental services

Tuesday, July 09, 2019

Fibertec Project Number: 91338
Project Identification: 31402024.00A /31402024.00A
Submittal Date: 07/01/2019

Mr. Adam Heft
WSP Michigan Inc.
6011 West St. Joe
Suite 400
Lansing, MI 48917-5011

Dear Mr. Heft,

Thank you for selecting Fibertec Environmental Services as your analytical laboratory. The samples you submitted have been analyzed in accordance with NELAC standards and the results compiled in the attached report. Any exceptions to NELAC compliance are noted in the report. These results apply only to those samples submitted. Please note TO-15 samples will be disposed of 7 calendar days after the reporting date. All other samples will be disposed of 30 days after the reporting date.

Samples were received at lab at 13.0° Celsius, which exceeds the maximum criteria of 6° Celsius.

If you have any questions regarding these results or if we may be of further assistance to you, please contact me at (517) 699-0345.

Sincerely,

Stephan. Wallace

By Stephannie Wallace at 3:54 PM, Jul 09, 2019

For Daryl P. Strandbergh
Laboratory Director

Enclosures

Fibertec environmental services

Analytical Laboratory Report
Laboratory Project Number: 91338
Laboratory Sample Number: 91338-001

Order: 91338
Page: 2 of 10
Date: 07/09/19

Client Identification:	**WSP Michigan Inc.**	Sample Description:	**BH19-08**	Chain of Custody:	**163350**
Client Project Name:	**31402024.00A**	Sample No:	**1**	Collect Date:	**06/26/19**
Client Project No:	**31402024.00A**	Sample Matrix:	**Ground Water**	Collect Time:	**16:03**

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Methane by GC/FID **Aliquot ID: 91338-001B** **Matrix: Ground Water**
Method: RSK-175 **Description: BH19-08**

						Preparation		Analysis		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Methane	U		µg/L	2.6	1.0	07/08/19	PS19G08F	07/08/19	S419G08A	RDK

Hydrogen Sulfide (HACH 8131/Calculation) **Aliquot ID: 91338-001A** **Matrix: Ground Water**
Method: SM 4500-S2- H. **Description: BH19-08**

						Preparation		Analysis		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Hydrogen Sulfide	U		mg/L	0.020	1.0	NA	NA	07/03/19	W219G03A	AMW

Fibertec environmental services

Analytical Laboratory Report
Laboratory Project Number: 91338
Laboratory Sample Number: 91338-002

Order: 91338
Page: 3 of 10
Date: 07/09/19

Client Identification:	**WSP Michigan Inc.**	Sample Description:	**BH19-09**	Chain of Custody:	**163350**
Client Project Name:	**31402024.00A**	Sample No:	**2**	Collect Date:	**06/26/19**
Client Project No:	**31402024.00A**	Sample Matrix:	**Ground Water**	Collect Time:	**17:42**

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Methane by GC/FID **Aliquot ID: 91338-002B** **Matrix: Ground Water**
Method: RSK-175 **Description: BH19-09**

						Preparation		Analysis		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Methane	U		µg/L	2.6	1.0	07/08/19	PS19G08F	07/08/19	S419G08A	RDK

Hydrogen Sulfide (HACH 8131/Calculation) **Aliquot ID: 91338-002A** **Matrix: Ground Water**
Method: SM 4500-S2- H. **Description: BH19-09**

						Preparation		Analysis		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Hydrogen Sulfide	U		mg/L	0.020	1.0	NA	NA	07/03/19	W219G03A	AMW

Fibertec environmental services

Analytical Laboratory Report
Laboratory Project Number: 91338
Laboratory Sample Number: 91338-003

Order: 91338
Page: 4 of 10
Date: 07/09/19

Client Identification:	**WSP Michigan Inc.**	Sample Description:	**BH19-10**	Chain of Custody:	**163350**
Client Project Name:	**31402024.00A**	Sample No:	**3**	Collect Date:	**06/26/19**
Client Project No:	**31402024.00A**	Sample Matrix:	**Ground Water**	Collect Time:	**14:06**

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Methane by GC/FID **Aliquot ID: 91338-003B** **Matrix: Ground Water**
Method: RSK-175 **Description: BH19-10**

						Preparation		Analysis		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Methane	U		µg/L	2.6	1.0	07/08/19	PS19G08F	07/08/19	S419G08A	RDK

Hydrogen Sulfide (HACH 8131/Calculation) **Aliquot ID: 91338-003A** **Matrix: Ground Water**
Method: SM 4500-S2- H. **Description: BH19-10**

						Preparation		Analysis		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Hydrogen Sulfide	U		mg/L	0.020	1.0	NA	NA	07/03/19	W219G03A	AMW

Fibertec environmental services

Analytical Laboratory Report
Laboratory Project Number: 91338
Laboratory Sample Number: 91338-004

Order: 91338
Page: 5 of 10
Date: 07/09/19

Client Identification:	**WSP Michigan Inc.**	Sample Description:	**BH19-15**	Chain of Custody:	**163350**
Client Project Name:	**31402024.00A**	Sample No:	**4**	Collect Date:	**06/26/19**
Client Project No:	**31402024.00A**	Sample Matrix:	**Ground Water**	Collect Time:	**06:46**

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Methane by GC/FID **Aliquot ID: 91338-004B** **Matrix: Ground Water**
Method: RSK-175 **Description: BH19-15**

						Preparation		Analysis		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Methane	U	J	µg/L	2.6	1.0	07/08/19	PS19G08F	07/08/19	S419G08A	RDK

Hydrogen Sulfide (HACH 8131/Calculation) **Aliquot ID: 91338-004A** **Matrix: Ground Water**
Method: SM 4500-S2- H. **Description: BH19-15**

						Preparation		Analysis		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Hydrogen Sulfide	U		mg/L	0.020	1.0	NA	NA	07/03/19	W219G03A	AMW

Fibertec environmental services

Analytical Laboratory Report
Laboratory Project Number: 91338
Laboratory Sample Number: 91338-005

Order: 91338
Page: 6 of 10
Date: 07/09/19

Client Identification:	**WSP Michigan Inc.**	Sample Description:	**BH19-PZ-40**	Chain of Custody:	**163350**
Client Project Name:	**31402024.00A**	Sample No:	**5**	Collect Date:	**06/27/19**
Client Project No:	**31402024.00A**	Sample Matrix:	**Ground Water**	Collect Time:	**16:49**

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Methane by GC/FID **Aliquot ID: 91338-005B** **Matrix: Ground Water**
Method: RSK-175 **Description: BH19-PZ-40**

						Preparation		Analysis		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Methane	U		µg/L	2.6	1.0	07/08/19	PS19G08F	07/08/19	S419G08A	RDK

Hydrogen Sulfide (HACH 8131/Calculation) **Aliquot ID: 91338-005A** **Matrix: Ground Water**
Method: SM 4500-S2- H. **Description: BH19-PZ-40**

						Preparation		Analysis		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Hydrogen Sulfide	U		mg/L	0.020	1.0	NA	NA	07/03/19	W219G03A	AMW

Fibertec environmental services

Analytical Laboratory Report
Laboratory Project Number: 91338
Laboratory Sample Number: 91338-006

Order: 91338
Page: 7 of 10
Date: 07/09/19

Client Identification:	**WSP Michigan Inc.**	Sample Description:	**BH19-PZ-41**	Chain of Custody:	**163350**
Client Project Name:	**31402024.00A**	Sample No:	**6**	Collect Date:	**06/27/19**
Client Project No:	**31402024.00A**	Sample Matrix:	**Ground Water**	Collect Time:	**15:45**

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Methane by GC/FID **Aliquot ID: 91338-006B** **Matrix: Ground Water**
Method: RSK-175 **Description: BH19-PZ-41**

						Preparation		Analysis		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Methane	U		µg/L	2.6	1.0	07/08/19	PS19G08F	07/08/19	S419G08A	RDK

Hydrogen Sulfide (HACH 8131/Calculation) **Aliquot ID: 91338-006A** **Matrix: Ground Water**
Method: SM 4500-S2- H. **Description: BH19-PZ-41**

						Preparation		Analysis		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Hydrogen Sulfide	U		mg/L	0.020	1.0	NA	NA	07/03/19	W219G03A	AMW

Fibertec environmental services

Analytical Laboratory Report
Laboratory Project Number: 91338
Laboratory Sample Number: 91338-007

Order: 91338
Page: 8 of 10
Date: 07/09/19

Client Identification:	**WSP Michigan Inc.**	Sample Description:	**PW19-12**	Chain of Custody:	**163350**
Client Project Name:	**31402024.00A**	Sample No:	**7**	Collect Date:	**06/27/19**
Client Project No:	**31402024.00A**	Sample Matrix:	**Ground Water**	Collect Time:	**14:42**

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Methane by GC/FID **Aliquot ID: 91338-007B** **Matrix: Ground Water**
Method: RSK-175 **Description: PW19-12**

						Preparation		Analysis		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Methane	**5.3**	J	µg/L	2.6	1.0	07/08/19	PS19G08F	07/08/19	S419G08A	RDK

Hydrogen Sulfide (HACH 8131/Calculation) **Aliquot ID: 91338-007A** **Matrix: Ground Water**
Method: SM 4500-S2- H. **Description: PW19-12**

						Preparation		Analysis		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Hydrogen Sulfide	U		mg/L	0.020	1.0	NA	NA	07/03/19	W219G03A	AMW

Fibertec environmental services

Analytical Laboratory Report
Laboratory Project Number: 91338
Laboratory Sample Number: 91338-008

Order: 91338
Page: 9 of 10
Date: 07/09/19

Client Identification:	**WSP Michigan Inc.**	Sample Description:	**BH19-PZ-42 (PZ-42)**	Chain of Custody:	**163350**
Client Project Name:	**31402024.00A**	Sample No:	**8**	Collect Date:	**06/27/19**
Client Project No:	**31402024.00A**	Sample Matrix:	**Ground Water**	Collect Time:	**12:20**

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Methane by GC/FID **Aliquot ID: 91338-008B** **Matrix: Ground Water**
Method: RSK-175 **Description: BH19-PZ-42 (PZ-42)**

						Preparation		Analysis		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Methane	U	J	µg/L	2.6	1.0	07/08/19	PS19G08F	07/08/19	S419G08A	RDK

Hydrogen Sulfide (HACH 8131/Calculation) **Aliquot ID: 91338-008A** **Matrix: Ground Water**
Method: SM 4500-S2- H. **Description: BH19-PZ-42 (PZ-42)**

						Preparation		Analysis		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Hydrogen Sulfide	U		mg/L	0.020	1.0	NA	NA	07/03/19	W219G03A	AMW

Fibertec environmental services

Analytical Laboratory Report
Laboratory Project Number: 91338

Order: 91338
Page: 10 of 10
Date: 07/09/19

Definitions/ Qualifiers:

A: Spike recovery or precision unusable due to dilution.
B: The analyte was detected in the associated method blank.
E: The analyte was detected at a concentration greater than the calibration range, therefore the result is estimated.
J: The concentration is an estimated value.
M: Modified Method
U: The analyte was not detected at or above the reporting limit.
X: Matrix Interference has resulted in a raised reporting limit or distorted result.
W: Results reported on a wet-weight basis.
*: Value reported is outside QC limits

Exception Summary:

J : The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

Analysis Locations:

All analyses performed in Holt.

NELAP ACCREDITED TNI LABORATORY

Accreditation Number(s):

T104704518-19-8 (TX)

Fibertec
environmental
services

Tuesday, August 06, 2019

Fibertec Project Number: 91802
Project Identification: 31402024.00B /31402024.00B
Submittal Date: 07/29/2019

Mr. Adam Heft
WSP Michigan Inc.
6011 West St. Joe
Suite 400
Lansing, MI 48917-5011

Dear Mr. Heft,

Thank you for selecting Fibertec Environmental Services as your analytical laboratory. The samples you submitted have been analyzed in accordance with NELAC standards and the results compiled in the attached report. Any exceptions to NELAC compliance are noted in the report. These results apply only to those samples submitted. Please note TO-15 samples will be disposed of 7 calendar days after the reporting date. All other samples will be disposed of 30 days after the reporting date.

Samples were received at lab at 9.5° Celsius, which exceeds the maximum criteria of 6° Celsius.

If you have any questions regarding these results or if we may be of further assistance to you, please contact me at (517) 699-0345.

Sincerely,

Stephan. Wallace

By Stephannie Wallace at : 9 M, u 0 , 2019

For Daryl P. Strandbergh
Laboratory Director

Enclosures

Fibertec environmental services

Analytical Laboratory Report
Laboratory Project Number: 91802
Laboratory Sample Number: 91802-001

Order: 91802
Page: 2 of 4
Date: 08/06/19

Client Identification:	**WSP Michigan Inc.**	Sample Description:	**BH19-07**	Chain of Custody:	**143569**
Client Project Name:	**31402024.00B**	Sample No:	**1**	Collect Date:	**07/22/19**
Client Project No:	**31402024.00B**	Sample Matrix:	**Ground Water**	Collect Time:	**11:25**

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Methane by GC/FID **Aliquot ID: 91802-001A** **Matrix: Ground Water**
Method: RSK-175 **Description: BH19-07**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation P. Date	Preparation P. Batch	Analysis A. Date	Analysis A. Batch	Init.
‡ 1. Methane	**11**		µg/L	2.6	1.0	07/31/19	PS19G31J	07/31/19	S419G31B	RDK

Hydrogen Sulfide (HACH 8131/Calculation) **Aliquot ID: 91802-001** **Matrix: Ground Water**
Method: SM 4500-S2- H. **Description: BH19-07**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation P. Date	Preparation P. Batch	Analysis A. Date	Analysis A. Batch	Init.
‡ 1. Hydrogen Sulfide	U		mg/L	0.020	1.0	NA	NA	07/29/19	W219G29B	CMB

Fibertec environmental services

Analytical Laboratory Report
Laboratory Project Number: 91802
Laboratory Sample Number: 91802-002

Order: 91802
Page: 3 of 4
Date: 08/06/19

Client Identification:	**WSP Michigan Inc.**	Sample Description:	**BH19-33**	Chain of Custody:	**143569**
Client Project Name:	**31402024.00B**	Sample No:	**2**	Collect Date:	**07/22/19**
Client Project No:	**31402024.00B**	Sample Matrix:	**Ground Water**	Collect Time:	**17:50**

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Methane by GC/FID **Aliquot ID: 91802-002A** **Matrix: Ground Water**
Method: RSK-175 **Description: BH19-33**

						Preparation		Analysis		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Methane	U		µg/L	2.6	1.0	07/31/19	PS19G31J	07/31/19	S419G31B	RDK

Hydrogen Sulfide (HACH 8131/Calculation) **Aliquot ID: 91802-002** **Matrix: Ground Water**
Method: SM 4500-S2- H. **Description: BH19-33**

						Preparation		Analysis		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Hydrogen Sulfide	U		mg/L	0.020	1.0	NA	NA	07/29/19	W219G29B	CMB

Fibertec environmental services

Analytical Laboratory Report
Laboratory Project Number: 91802

Definitions/ Qualifiers:

- **A:** Spike recovery or precision unusable due to dilution.
- **B:** The analyte was detected in the associated method blank.
- **E:** The analyte was detected at a concentration greater than the calibration range, therefore the result is estimated.
- **J:** The concentration is an estimated value.
- **M:** Modified Method
- **U:** The analyte was not detected at or above the reporting limit.
- **X:** Matrix Interference has resulted in a raised reporting limit or distorted result.
- **W:** Results reported on a wet-weight basis.
- ***:** Value reported is outside QC limits

Exception Summary:

Analysis Locations:

All analyses performed in Holt.

NELAP ACCREDITED TNI LABORATORY

Accreditation Number(s):

T104704518-19-8 (TX)

Appendix A
“Hold Time Exceeded”

Fibertec environmental services

Monday, July 22, 2019

Fibertec Project Number:	91471
Project Identification:	31402024.00B /31402024.00B
Submittal Date:	07/11/2019

Mr. Adam Heft
WSP Michigan Inc.
6011 West St. Joe
Suite 400
Lansing, MI 48917-5011

Dear Mr. Heft,

Thank you for selecting Fibertec Environmental Services as your analytical laboratory. The samples you submitted have been analyzed in accordance with NELAC standards and the results compiled in the attached report. Any exceptions to NELAC compliance are noted in the report. These results apply only to those samples submitted. Please note TO-15 samples will be disposed of 7 calendar days after the reporting date. All other samples will be disposed of 30 days after the reporting date.

If you have any questions regarding these results or if we may be of further assistance to you, please contact me at (517) 699-0345.

Sincerely,

Stephan. Wallace

By Stephannie Wallace at 12:39 PM, Jul 22, 2019

For Daryl P. Strandbergh
Laboratory Director

Enclosures

Fibertec environmental services

Analytical Laboratory Report
Laboratory Project Number: 91471
Laboratory Sample Number: 91471-001

Order: 91471
Page: 2 of 4
Date: 07/22/19

Client Identification:	**WSP Michigan Inc.**	Sample Description:	**BH19-16**	Chain of Custody:	**178153**
Client Project Name:	**31402024.00B**	Sample No:	**1**	Collect Date:	**07/03/19**
Client Project No:	**31402024.00B**	Sample Matrix:	**Ground Water**	Collect Time:	**14:50**

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Methane by GC/FID **Aliquot ID: 91471-001B** **Matrix: Ground Water**
Method: RSK-175 **Description: BH19-16**

						Preparation		Analysis		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Methane	U	H	µg/L	2.6	1.0	07/18/19	PS19G18F	07/18/19	S419G18D	RDK

Hydrogen Sulfide (HACH 8131/Calculation) **Aliquot ID: 91471-001A** **Matrix: Ground Water**
Method: SM 4500-S2- H. **Description: BH19-16**

						Preparation		Analysis		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Hydrogen Sulfide	U	H	mg/L	0.020	1.0	07/11/19	W219G11B	07/11/19	W219G11B	SEM

Fibertec environmental services

Analytical Laboratory Report
Laboratory Project Number: 91471
Laboratory Sample Number: 91471-002

Order: 91471
Page: 3 of 4
Date: 07/22/19

Client Identification:	**WSP Michigan Inc.**	Sample Description:	**BH19-17**	Chain of Custody:	**178153**
Client Project Name:	**31402024.00B**	Sample No:	**2**	Collect Date:	**07/10/19**
Client Project No:	**31402024.00B**	Sample Matrix:	**Ground Water**	Collect Time:	**10:33**

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Methane by GC/FID **Aliquot ID: 91471-002B** **Matrix: Ground Water**
Method: RSK-175 **Description: BH19-17**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation P. Date	Preparation P. Batch	Analysis A. Date	Analysis A. Batch	Init.
‡ 1. Methane	**5.5**	H	µg/L	2.6	1.0	07/18/19	PS19G18F	07/18/19	S419G18D	RDK

Hydrogen Sulfide (HACH 8131/Calculation) **Aliquot ID: 91471-002A** **Matrix: Ground Water**
Method: SM 4500-S2- H. **Description: BH19-17**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation P. Date	Preparation P. Batch	Analysis A. Date	Analysis A. Batch	Init.
‡ 1. Hydrogen Sulfide	U		mg/L	0.020	1.0	07/11/19	W219G11B	07/11/19	W219G11B	SEM

Fibertec environmental services

Analytical Laboratory Report
Laboratory Project Number: 91471

Definitions/ Qualifiers:

A: Spike recovery or precision unusable due to dilution.
B: The analyte was detected in the associated method blank.
E: The analyte was detected at a concentration greater than the calibration range, therefore the result is estimated.
J: The concentration is an estimated value.
M: Modified Method
U: The analyte was not detected at or above the reporting limit.
X: Matrix Interference has resulted in a raised reporting limit or distorted result.
W: Results reported on a wet-weight basis.
***:** Value reported is outside QC limits

Exception Summary:

H : Hold time exceeded.

Analysis Locations:

All analyses performed in Holt.

NELAP ACCREDITED TNI LABORATORY

Accreditation Number(s):

T104704518-19-8 (TX)

Appendix A
“Results May Be Biased Low”

Fibertec environmental services

Thursday, October 31, 2019

Fibertec Project Number: 93332
Project Identification: 31402024 /31402024
Submittal Date: 10/24/2019

Mr. Adam Heft
WSP Michigan Inc.
6011 West St. Joe
Suite 400
Lansing, MI 48917-5011

Dear Mr. Heft,

Thank you for selecting Fibertec Environmental Services as your analytical laboratory. The samples you submitted have been analyzed in accordance with NELAC standards and the results compiled in the attached report. Any exceptions to NELAC compliance are noted in the report. These results apply only to those samples submitted. Please note TO-15 samples will be disposed of 7 calendar days after the reporting date. All other samples will be disposed of 30 days after the reporting date.

If you have any questions regarding these results or if we may be of further assistance to you, please contact me at (517) 699-0345.

Sincerely,

Rikki Lott

By Rikki Lott at 2:59 PM, Oct 31, 2019

For Daryl P. Strandbergh
Laboratory Director

Enclosures

Fibertec environmental services

Analytical Laboratory Report
Laboratory Project Number: 93332
Laboratory Sample Number: 93332-001

Order: 93332
Page: 2 of 4
Date: 10/31/19

Client Identifica ion:	**WSP Michigan Inc.**	Sample Description:	**BH19-25**	Chain of Custody:	**175873**
Client Project Name:	**31402024**	Sample No:	**1**	Collect Date:	**10/17/19**
Client Project No:	**31402024**	Sample Matrix:	**Ground Water**	Collect Time:	**10:30**

Sample Comments:

Definitions: Q: Qualifier (see defini ions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Hydrogen Sulfide (HACH 8131/Calculation) **Aliquot ID: 93332-001** **Matrix: Ground Water**
Method: SM 4500-S2- H. **Description: BH19-25**

						Preparation		Analysis		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilu ion	P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Hydrogen Sulfide	U		mg/L	0 020	1.0	10/24/19	W219J24D	10/24/19	W219J24D	VO

Fibertec environmental services

Analytical Laboratory Report
Laboratory Project Number: 93332
Laboratory Sample Number: 93332-002

Order: 93332
Page: 3 of 4
Date: 10/31/19

Client Identifica ion:	**WSP Michigan Inc.**	Sample Description:	**BH19-28**	Chain of Custody:	**175873**
Client Project Name:	**31402024**	Sample No:	**2**	Collect Date:	**10/22/19**
Client Project No:	**31402024**	Sample Matrix:	**Ground Water**	Collect Time:	**03:30**

Sample Comments:

Definitions: Q: Qualifier (see defini ions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Methane by GC/FID **Aliquot ID: 93332-002A** **Matrix: Ground Water**
Method: RSK-175 **Description: BH19-28**

						Preparation		Analysis		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilu ion	P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Methane	U	J-	µg/L	2.6	1.0	10/29/19	PS19J29G	10/29/19	S419J29A	RDK

Hydrogen Sulfide (HACH 8131/Calculation) **Aliquot ID: 93332-002** **Matrix: Ground Water**
Method: SM 4500-S2- H. **Description: BH19-28**

						Preparation		Analysis		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilu ion	P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Hydrogen Sulfide	U		mg/L	0 020	1.0	10/24/19	W219J24D	10/24/19	W219J24D	VO

Fibertec environmental services

Analytical Laboratory Report
Laboratory Project Number: 93332

Definitions/ Qualifiers:

A: Spike recovery or precision unusable due to dilution.
B: The analyte was detected in the associated method blank.
E: The analyte was detected at a concentration greater than the calibra ion range, therefore the result is estimated.
J: The concentration is an estimated value.
M: Modified Method
U: The analyte was not detected at or above the reporting limit.
X: Matrix Interference has resulted in a raised reporting limit or distorted result.
W: Results reported on a wet-weight basis.
***:** Value reported is outside QC limits

Exception Summary:

J- : The result is an estimated quantity, but the result may be biased low.

Analysis Locations:

All analyses performed in Holt.

NELAP ACCREDITED TNI LABORATORY

Accreditation Number(s):

T104704518-19-8 (TX)

Fibertec environmental services

Wednesday, November 06, 2019

Fibertec Project Number:	93448
Project Identification:	Up North Project (31401952.000) /31401952.000
Submittal Date:	10/30/2019

Mr. Adam Heft
WSP Michigan Inc.
6011 West St. Joe
Suite 400
Lansing, MI 48917-5011

Dear Mr. Heft,

Thank you for selecting Fibertec Environmental Services as your analytical laboratory. The samples you submitted have been analyzed in accordance with NELAC standards and the results compiled in the attached report. Any exceptions to NELAC compliance are noted in the report. These results apply only to those samples submitted. Please note TO-15 samples will be disposed of 7 calendar days after the reporting date. All other samples will be disposed of 30 days after the reporting date.

If you have any questions regarding these results or if we may be of further assistance to you, please contact me at (517) 699-0345.

Sincerely,

Stephan. Wallace

By Stephannie Wallace at 2: 0 PM, 0 , 2019

For Daryl P. Strandbergh
Laboratory Director

Enclosures

Fibertec environmental services

Analytical Laboratory Report
Laboratory Project Number: 93448
Laboratory Sample Number: 93448-001

Order: 93448
Page: 2 of 3
Date: 11/06/19

Client Identification:	WSP Michigan Inc.	Sample Description:	BH19-19	Chain of Custody:	143575
Client Project Name:	Up North Project (31401952.000)	Sample No:		Collect Date:	10/27/19
Client Project No:	31401952.000	Sample Matrix:	Ground Water	Collect Time:	16:15

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Methane by GC/FID — Aliquot ID: 93448-001A — Matrix: Ground Water
Method: RSK-175 — Description: BH19-19

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation P. Date	Preparation P. Batch	Analysis A. Date	Analysis A. Batch	Init.
‡ 1. Methane	U		µg/L	2.6	1.0	11/05/19	PS19K05F	11/05/19	S419K05A	BDA

Hydrogen Sulfide (HACH 8131/Calculation) — Aliquot ID: 93448-001 — Matrix: Ground Water
Method: SM 4500-S2- H. — Description: BH19-19

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation P. Date	Preparation P. Batch	Analysis A. Date	Analysis A. Batch	Init.
‡ 1. Hydrogen Sulfide	U	J-	mg/L	0.020	1.0	10/31/19	W219J31C	10/31/19	W219J31C	VO

Fibertec environmental services

Analytical Laboratory Report
Laboratory Project Number: 93448

Order: 93448
Page: 3 of 3
Date: 11/06/19

Definitions/ Qualifiers:

A: Spike recovery or precision unusable due to dilution.
B: The analyte was detected in the associated method blank.
E: The analyte was detected at a concentration greater than the calibration range, therefore the result is estimated.
J: The concentration is an estimated value.
M: Modified Method
U: The analyte was not detected at or above the reporting limit.
X: Matrix Interference has resulted in a raised reporting limit or distorted result.
W: Results reported on a wet-weight basis.
*: Value reported is outside QC limits

Exception Summary:

J- : The result is an estimated quantity, but the result may be biased low.

Analysis Locations:

All analyses performed in Holt.

NELAP ACCREDITED TNI LABORATORY

Accreditation Number(s):

T104704518-19-8 (TX)

Fibertec environmental services

Monday, July 29, 2019

Fibertec Project Number:	91684
Project Identification:	31402024.00B /31402024.00B
Submittal Date:	07/22/2019

Mr. Adam Heft
WSP Michigan Inc.
6011 West St. Joe
Suite 400
Lansing, MI 48917-5011

Dear Mr. Heft,

Thank you for selecting Fibertec Environmental Services as your analytical laboratory. The samples you submitted have been analyzed in accordance with NELAC standards and the results compiled in the attached report. Any exceptions to NELAC compliance are noted in the report. These results apply only to those samples submitted. Please note TO-15 samples will be disposed of 7 calendar days after the reporting date. All other samples will be disposed of 30 days after the reporting date.

If you have any questions regarding these results or if we may be of further assistance to you, please contact me at (517) 699-0345.

Sincerely,

Stephan. Wallace

By Stephannie Wallace at 1:0 PM, Jul 29, 2019

For Daryl P. Strandbergh
Laboratory Director

Enclosures

Fibertec environmental services

Analytical Laboratory Report
Laboratory Project Number: 91684
Laboratory Sample Number: 91684-001

Order: 91684
Page: 2 of 4
Date: 07/29/19

Client Identification:	**WSP Michigan Inc.**	Sample Description:	**BH19-37**	Chain of Custody:	**177118**
Client Project Name:	**31402024.00B**	Sample No:	**1**	Collect Date:	**07/17/19**
Client Project No:	**31402024.00B**	Sample Matrix:	**Ground Water**	Collect Time:	**NA**

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Methane by GC/FID **Aliquot ID: 91684-001A** **Matrix: Ground Water**
Method: RSK-175 **Description: BH19-37**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation P. Date	Preparation P. Batch	Analysis A. Date	Analysis A. Batch	Init.
‡ 1. Methane	U	J-	µg/L	2.6	1.0	07/24/19	PS19G24G	07/24/19	S419G24A	RDK

Hydrogen Sulfide (HACH 8131/Calculation) **Aliquot ID: 91684-001** **Matrix: Ground Water**
Method: SM 4500-S2- H. **Description: BH19-37**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation P. Date	Preparation P. Batch	Analysis A. Date	Analysis A. Batch	Init.
‡ 1. Hydrogen Sulfide	U		mg/L	0.020	1.0	NA	NA	07/23/19	W219G23B	AMW

Fibertec environmental services

Analytical Laboratory Report
Laboratory Project Number: 91684
Laboratory Sample Number: 91684-002

Order: 91684
Page: 3 of 4
Date: 07/29/19

Client Identification:	**WSP Michigan Inc.**	Sample Description:	**BH19-38**	Chain of Custody:	**177118**
Client Project Name:	**31402024.00B**	Sample No:	**2**	Collect Date:	**07/20/19**
Client Project No:	**31402024.00B**	Sample Matrix:	**Ground Water**	Collect Time:	**NA**

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Methane by GC/FID **Aliquot ID: 91684-002A** **Matrix: Ground Water**
Method: RSK-175 **Description: BH19-38**

						Preparation		Analysis		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Methane	**7.1**	J-	µg/L	2.6	1.0	07/24/19	PS19G24G	07/24/19	S419G24A	RDK

Hydrogen Sulfide (HACH 8131/Calculation) **Aliquot ID: 91684-002** **Matrix: Ground Water**
Method: SM 4500-S2- H. **Description: BH19-38**

						Preparation		Analysis		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Hydrogen Sulfide	U		mg/L	0.020	1.0	NA	NA	07/23/19	W219G23B	AMW

Fibertec environmental services

Analytical Laboratory Report
Laboratory Project Number: 91684

Definitions/ Qualifiers:

A: Spike recovery or precision unusable due to dilution.
B: The analyte was detected in the associated method blank.
E: The analyte was detected at a concentration greater than the calibration range, therefore the result is estimated.
J: The concentration is an estimated value.
M: Modified Method
U: The analyte was not detected at or above the reporting limit.
X: Matrix Interference has resulted in a raised reporting limit or distorted result.
W: Results reported on a wet-weight basis.
*: Value reported is outside QC limits

Exception Summary:

J- : The result is an estimated quantity, but the result may be biased low.

Analysis Locations:

All analyses performed in Holt.

NELAP ACCREDITED TNI LABORATORY

Accreditation Number(s):

T104704518-19-8 (TX)

STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the Application of Enbridge Energy, Limited Partnership for the Authority to Replace and Relocate the Segment of Line 5 Crossing the Straits of Mackinac into a Tunnel Beneath the Straits of Mackinac, if Approval is Required Pursuant to 1929 PA 16; MCL 483.1 et seq. and Rule 447 of the Michigan Public Service Commission's Rules of Practice and Procedure, R 792.10447, or the Grant of other Appropriate Relief	U-20763 ALJ Christopher S. Saunders

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PROOF OF SERVICE

On May 5, 2023, an electronic copy of *Bay Mills Indian Community's Initial Brief on Remand and Appendix A* was served on the following parties:

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Date: May 5, 2023

By: Christopher R. Clark

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