How many areas of the pipeline have lost coating? What is the extent of coating loss in these areas? And how and when were these areas discovered by the company?

All areas of the Dual Pipes have a protective coating to prevent corrosion of the metallic pipe. The coating consists of a primer, a layer of enamel and a glass inner and outer wrap. The primer and enamel layers are the principal corrosion protection coating whereas the glass wraps were initially installed for protection of the enamel layer during construction. The coating system is by all standards providing full corrosion protection and this is confirmed by cathodic protection data and In-line inspection results.

Underwater inspections are conducted every 2 years to assess threats that may impact the integrity of the Dual Pipes. This includes assessment of the coating. The lack of Biota on the coating is used as an indicator that there may be an anomaly with the coating. From the 2016 inspection, 18 areas that lacked biota were selected as sample locations as part of the Biota Work Plan. Eight of the 18 areas identified in the Biota Work Plan show a lack of Biota but there is no indication of any anomaly with the outer wrap or other elements of the coating, including the enamel layer that covers the pipeline. Ten of the 18 areas identified in the Biota Plan show some signs of anomalies in the outer wrap but no issues with the enamel coating. Enbridge plans to inspect each of these 18 areas this summer under its Biota Work Plan, which is awaiting EPA approval. The 2016 inspection also found other isolated areas where the outer wrap appears to have anomalies. A Supplemental Biota Work Plan submitted to EPA for review on March 23, 2017 provides that other areas that show similar signs of possible anomalies in the coating may be inspected depending on the review of the initial 18 areas identified. In addition, three other areas described in the Supplemental Biota Work Plan will be assessed to determine the status of the coating at those locations. A copy of the Supplemental Biota Work Plan is attached to this response to your questions, together with a copy of the March 29, 2017 responses to questions posed on this matter by the State of Michigan.

What inspections and remedial action are underway to address existing and future coating loss?

As described above, and by all standards, the coating system is providing full protection. This is confirmed by cathodic protection data and in-line inspection results.

In order to investigate the efficacy of the coating system and the integrity of the pipeline, regularly scheduled inspections have been and will continue to be conducted as follows:

1. Remote Operated Vehicle (ROV) video inspections of the exterior of the Dual Pipes are conducted every 2 years to gather data regarding possible threats to the integrity of the Dual Pipes including potential coating anomalies. Based upon these ROV inspections, additional inspections using divers may be conducted to determine if any mitigation measures such as coating repairs are required. If deemed necessary, remedial action at these sites will include the installation of coating repair material.

2. In-line Inspections (ILI) are conducted to assess possible threats to the structural integrity of the Dual Pipes including assessing the coating condition. In accordance with the 2016 PIPES Act, Enbridge conducts ILI for relevant known threats (e.g. corrosion) at an interval not exceeding 12 months. The next corrosion ILI for the Dual Pipes is currently scheduled for April 2017. Based upon the results of these inspections, Enbridge will complete pipeline repairs in accordance with PHMSA regulations, the Consent Decree, and Enbridge's internal procedures. Currently, there are no known anomalies on the Dual Pipes identified during previous ILI that require repair.
3. The cathodic protection system on the Dual Pipes are remotely monitored 24 hours a day, 7 days a week and notifications are provided immediately to field staff if any out of parameter operating conditions are identified.

If areas along Line 5 lack a coating or wrap, how does that affect the structural integrity of the pipeline?

The loss of the outer wrap has no effect on the performance of the underlying coating that protects the pipe and no effect on the structural integrity of the pipelines, which remains sound.

If the other layers of the coating were affected, then the Cathodic Protection system would continue to protect the Dual Pipes from corrosion. In that case, the structural integrity of the Dual Pipes would not be affected. In addition, if coating loss were discovered, it is possible to repair coating layers. The ultimate determiner of whether the coating system is working as designed comes from in-line inspection results that have not identified any areas of external corrosion on either of the crossings.

In addition to the loss of protective coating on Line 5, we are also aware of new concerns regarding the pipeline's capacity to withstand strong and sustained water currents in the Straits of Mackinac. Please explain how Enbridge accounts for and analyzes both the normal and strongest currents that affect Line 5.

The normal and strongest currents measured at the Straits of Mackinac crossing are well below the design strength of the dual pipelines. These pipelines were designed and constructed to withstand the strong and sustained water currents in the Straits of Mackinac. Enbridge completed a water current study through Kiefner and Associates that utilized tens of thousands of pipe depth water current velocity measurements at multiple locations in the Straits. The data utilized was gathered over a 2 year period to ensure that seasonal fluctuations in water current levels were captured. The study confirms that the strongest currents are well below the strength capacity of the pipelines to withstand the forces and vibration induced on the pipelines for span lengths almost 2 times the length allowable within our easement. Enbridge's span management program, which includes the installation of screw anchor supports, provides more than adequate safety for the structural loading from water currents on the Dual Pipes.

Enbridge has also conducted in-line inspections to ultrasonically inspect all of the girth welds of the Dual Pipes and has found no weld defects that would represent any reduced capacity of the pipeline to withstand the high currents in the Straits of Mackinac.