

1 Wind-driven sediment resuspension in the world's fourth largest lake influences phosphorus load
2 to the eleventh largest lake.

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Supporting Information

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20 5 pages

21 6 figures

22 1 table

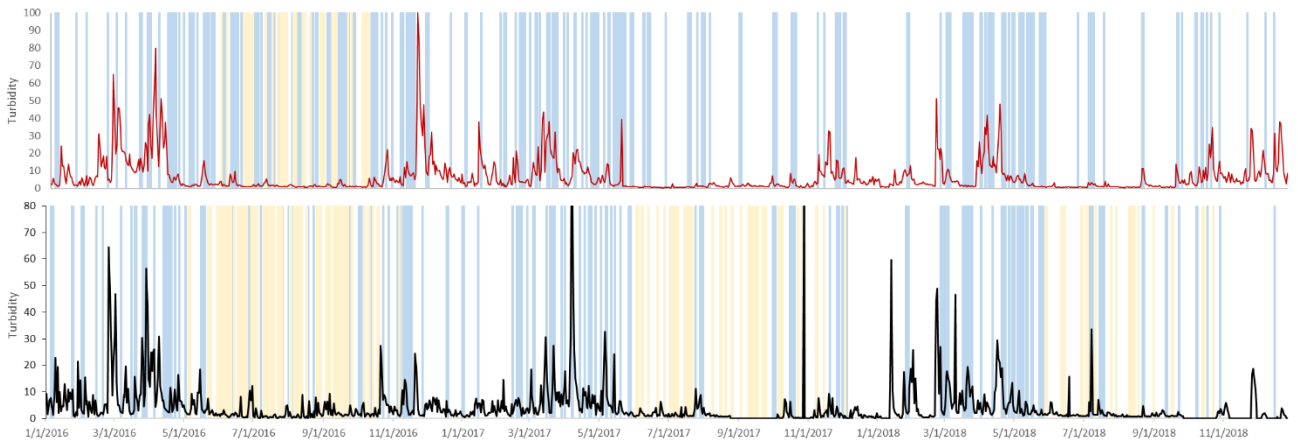


Figure S1. Satellite- and turbidity-based measures of sediment resuspension in the Ontario (top) and Michigan (bottom) nearshore regions for 2016-2018. Days with resuspension (blue bars), no resuspension (yellow bars), and unusable images (white). Turbidity at the Grand Bend, ON (red) and Lexington, MI (black) water treatment plant intakes.

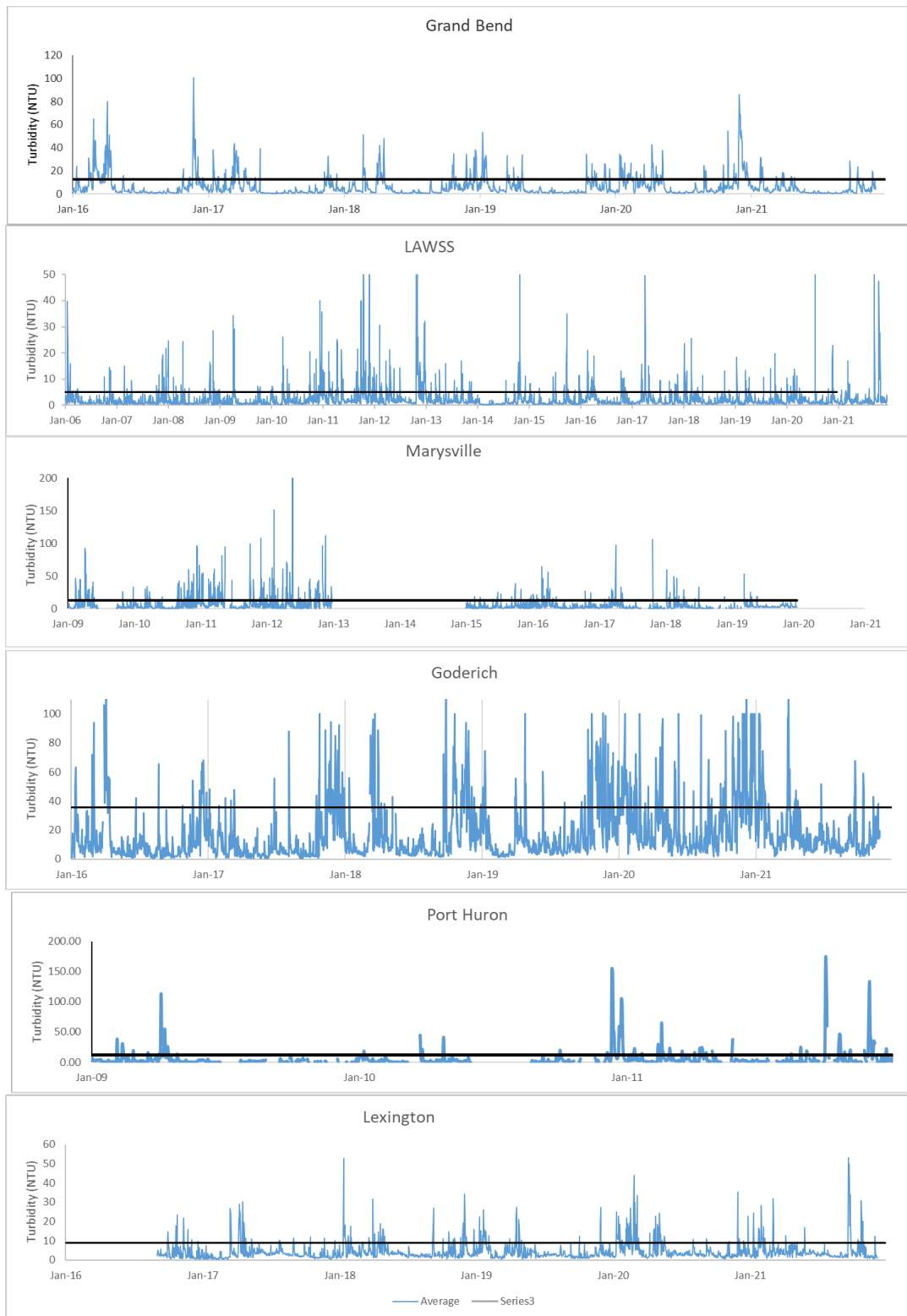
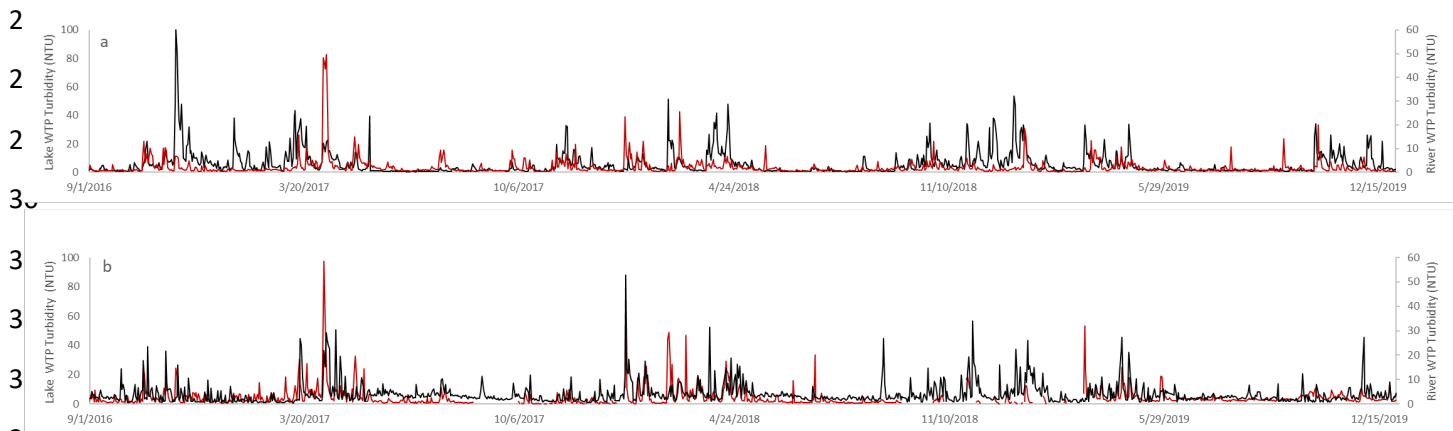


Figure S2. Water treatment plant turbidity. Daily traces (blue) and 2X the long term mean (black), illustrating the frequency of excursions.

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3 Figure S3. Ontario WTP turbidity (a) at Grand Bend (black) and LAWSS (red) and Michigan WTP turbidity (b) at Lexington (black) and Marysville (red).

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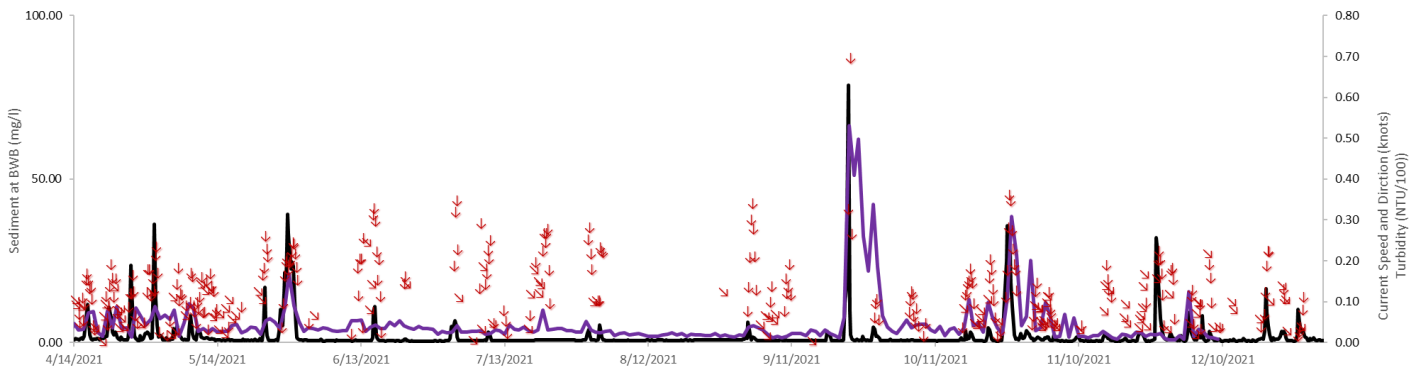


Figure S4. Daily average TSS (mg/l) at the Michigan LISST sensor (black line), turbidity (NTU/100) at the Lexington WTP (purple line), and current speed (knots) and direction (arrows) in Lake Huron near Lexington. Current speeds and arrows are only displayed when currents come from the north or northwest.

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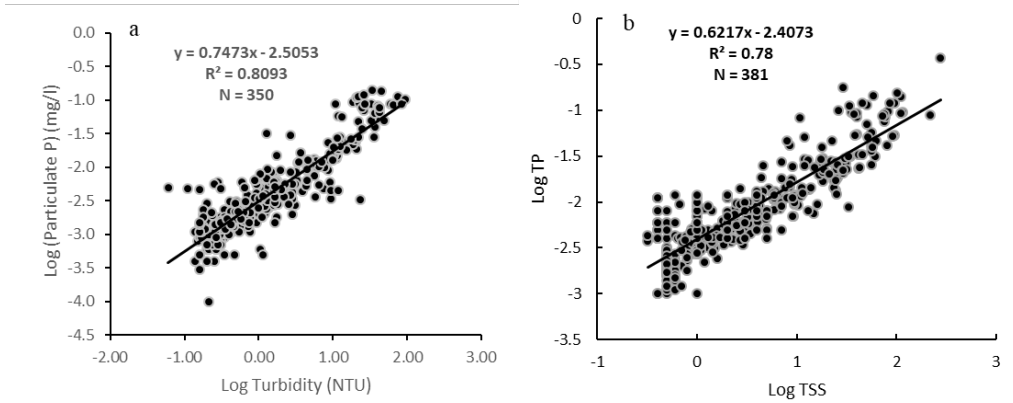


Figure 8. a) Particulate P (mg/l) - Turbidity (NTU) and b) Log TP (mg/l) - Log TSS (mg/l) regressions.

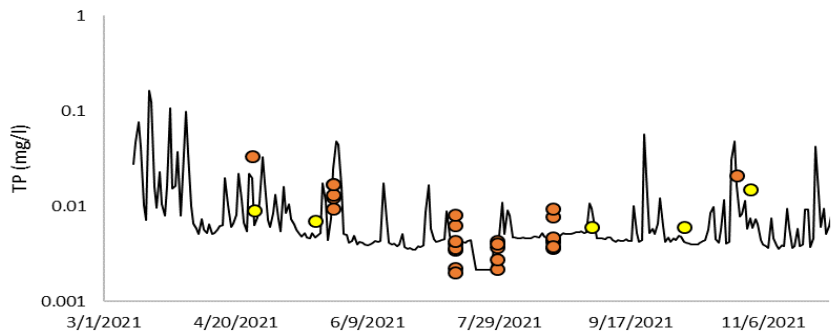


Figure S6. TP concentrations derived from the LISST sensor (black line) and measurements at Port Huron (yellow dots) and the St. Clair River (orange dots).

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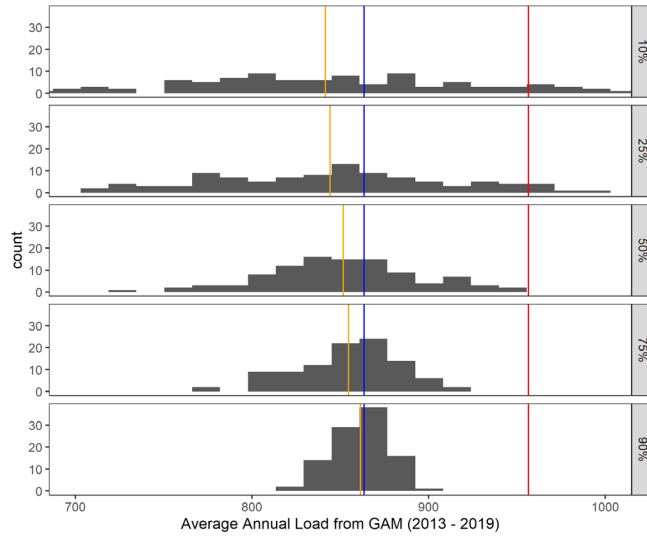


Figure S7. Frequency distributions of Point Edward GAM-based load estimates based on 10% to 90% subsets of the full TP concentration data set. Red line is the turbidity-based estimate, Blue line is the mean using the full data set. Orange line is the mean of each subset distribution.

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Table S1. Total P ($\mu\text{g/l}$), TP:TSS ($\mu\text{g/mg}$), Bioavailable P (% of PP) for Grand Bend and St. Clair River stations.

Date	TP ($\mu\text{g/l}$)	TP:TSS ($\mu\text{gP/mg}$)	Date	BioP %PP
Grand Bend Station Means				
3/25/2021	5.60	2.90	3/25/2021	36%
4/14/2021	4.37	2.98	4/14/2021	39%
4/26/2021	11.50	1.06	4/26/2021	39%
5/28/2021	19.00	0.90	5/28/2021	26%
6/17/2021	5.40	2.93	6/17/2021	36%
9/3/2021	3.85	2.14	9/28/2021	37%
9/28/2021	11.20	1.47	10/27/2021	63%
10/27/2021	5.85	1.95		
BWB cross section means				
4/26/2021	33.90		4/26/2021	37%
5/27/2021	12.55	0.53	5/27/2021	22%
6/16/2021	6.56	1.47	6/16/2021	36%
7/12/2021	6.97	4.18	7/12/2021	45%
7/28/2021	4.02	5.83	7/28/2021	43%
8/18/2021	5.29	5.68	8/18/2021	50%
1/0/1900	13.00	0.52	10/27/2021	44%
1/0/1900	30.39	0.69	10/22/2021	39%
			10/27/2021	32%