Supplementary Materials: Activation of Aspen Wood with Carbon Dioxide and Phosphoric Acid for Removal of Total Organic Carbon from Oil Sands Produced Water: Increasing the Yield with Bio-Oil Recycling

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Figure S1. UV-vis spectrum of SAGD water after 25 times dilution with deionized water.

Figure S2. Selected N$_2$ adsorption (solid lines) and desorption (dotted lines) isotherms of the activated carbons.
Figure S2 shows adsorption isotherms of the non-activated char and activated carbons. The N₂ uptake by Char-800-HT exclusively at relative pressures $P/P_0$ below 0.1 indicates the highly microporous structure with narrow pore size distribution of this sample. N₂ adsorption capacities (isotherm plateau and nitrogen adsorption) of the CO₂ activated carbons increased with longer activation time. Evidence for the formation of micropores in these samples includes the increased N₂ uptake at $P/P_0$ below 0.1, while evidence for the formation of meso/macropores includes the lack of a plateau and a hysteresis loop. In H₃PO₄ activated carbon samples, the widening of pores and development of mesopores were enhanced by the higher H₃PO₄:wood ratio.

Figure S3. The influence of pH on the precipitation of TOC from SAGD water. The symbols correspond to the measurements, and the lines are only to guide the eye.

Figure S4. The CO (left) and CO₂ (right) TPD profiles of the carbon samples.