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## The 1900s Southwestern Ontario Sand Sucker Panic

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A thesis submitted in partial fulfillment of the requirements for the Master of Arts degree in History

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## Abstract

During the early twentieth century, aggregate mining in Great Lakes waters supplied sand and gravel for infrastructure development in the lakes' shoreline communities. This thesis explores commercial dredging and its impacts at Lake Erie's Pelee Island and Point Pelee, and along the St. Clair River. The mostly transnational activity produced shoreline erosion that threatened agricultural operations, and sand suckers, the dredges that performed the mining, came to symbolize American capitalist exploitation in southwestern Ontario. Disputes arose over the extent of the erosion and affected relations between governments at all levels. Using government and business records, I argue that the Ontario government's resolution of the crisis by extending a land-based regulatory framework into an already fragmented waterbody regulatory system only exacerbated the situation. Meanwhile, practical efforts to protect shorelines, including scientific study of shoreline processes, sparked a shift in the understanding of freshwater ecology from atomistic to holistic, which helped to end mining in Canada's western Lake Erie.

## Keywords

Mining, Sand, Gravel, Dredging, Erosion, Sand Boats, Sand Suckers, Lake Erie, St. Clair River, Point Pelee, Pelee Island, Gre20th Century, Canada, Canada-U.S. border

## Lay Summary

During the early twentieth century, aggregate mining in Great Lakes waters supplied sand and gravel for infrastructure development in the lakes' shoreline communities. This thesis explores commercial dredging and its impacts at Lake Erie's Pelee Island and Point Pelee, and along the St. Clair River. The mostly transnational activity produced shoreline erosion that threatened agricultural operations, and sand suckers, the dredges that performed the mining, came to symbolize American capitalist exploitation in southwestern Ontario. Disputes arose over the extent of the erosion and affected relations between governments at all levels. Using government and business records, I argue that the Ontario government's resolution of the crisis by extending a land-based regulatory framework into an already fragmented waterbody regulatory system only exacerbated the situation. Meanwhile, practical efforts to protect shorelines, including scientific study of shoreline processes, sparked a shift in the understanding of freshwater ecology from a series of independently functioning parts to a unified system with interrelated parts, which helped to end mining in Canada's western Lake Erie.

## Acknowledgments

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Many members of the Great Lakes archival and maritime history communities have helped to locate research materials. Thank you Jason Dyck, Teaching and Learning Librarian at Western University Libraries, for your help in developing a research strategy; Mark Sprang, archivist of the Historical Collections of the Great Lakes at Bowling Green State University—I could not have navigated your university's vast trove of Great Lakes materials without your expert help; Dr. William Lafferty for so generously sharing your knowledge and writings on the Great Lakes sand-sucker industry and Mark Shumaker for sharing your work; Meg Reiner of the Marsh Collection and Samuel Hankinson at the Marine Historical Society of Detroit for your helpful suggestions; the librarians who manage the local history collections at Windsor and Sandusky public libraries for so thoroughly responding to my queries; and the VERY helpful archival team at Archives Ontario. Thank you, Prof. Emeritus Michael Bartlett, for your useful suggestions on approaching research in the construction industry.

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I have left family and friends to the bottom because they are my anchors. All of you, in the halls of Western and beyond who have put up with the incessant sand-sucking nattering and messaging, you are champs. Bob, you said that if I was going to do this, to give it all I've got. That goal would not have been achievable without your constancy and support, so here you go. This one is dedicated to you.

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# Chapter 1

## 1.1 Introduction

I met Tim Byrne in 2018 while researching Lake Erie shoreline erosion problems for a news feature. Byrne, then director of watershed-management services at the Essex Region Conservation Authority, had spent much of his career monitoring the issue along the lake's western shoreline.<sup>1</sup> That year, as well as the year before, storms and high waters had caused so much damage to properties on the Ontario shoreline that some owners abandoned their homes because the structures were no longer safe.

We had arranged to meet in Wheatley, close to where much of the damage had taken place. There, over a sandwich and fries in a downtown mom-and-pop restaurant, we talked about how water-based erosion and deposition changed landforms along the Lake Erie shoreline and other factors currently at play. Byrne told me that in the past 50 years lake levels were peaking more than descending, perhaps because of climate change. He described how busy lake waters dragged sediments, including clay, sand and gravel, from the towering grass-topped clay bluffs east of Wheatley and dumped them on landforms to the west, such as the strip of beach and dune that protected Hillman Marsh and Point Pelee.

Then he explained how human interactions along the shoreline over the past century had altered these shoreline processes. Structures meant to keep land in place, such as seawalls, breakwaters, jetties (to protect beaches), and groynes (to protect channels and inlets), had starved the waters of sand and interrupted near-shore currents. Altered currents attacked unprotected shoreline with greater force. Beaches that had once existed beneath the bluffs and protected them from the force of waves had disappeared, he said. In some places, waves had dug trenches along the bluffs, allowing moisture to seep into a

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<sup>1</sup> In 2023, the time of writing, Byrne is chief administrative officer of the Essex Region Conservation Authority.

layer of peat deep beneath the bluffs.<sup>2</sup> All that moisture expanded the peat, and its swelling destabilized the bluffs. By 2015, the blue clay bluffs near Wheatley were tumbling into the water at double the rate that they had receded for the preceding seventy years.<sup>3</sup>

Byrne spoke rapidly, spilling a career's worth of information and observation over lunch. So, when he first mentioned "sand suckers," I looked up from my notes, hoping he would get the hint and pause.

"Sand what?" I asked. He grinned and squinted, an expression that conveyed amusement and the patience of someone aware of something most people had forgotten. They were specialized dredges that sucked sand and gravel from waterbeds, shorelines, and riverbanks; they used a system reminiscent of a giant shop vacuum, he replied. At one time, the lake had teemed with sand suckers, he added, although they hadn't operated in the Canadian Lake Erie waters since the 1970s.

His account lingered with me well after the interview. I knew dredging existed, but the idea that this activity could have taken so much sand from the lake that it had begun to affect shoreline processes was quite something to wrap my head around. As it turned out, my first impressions of how these vessels affected the environment were erroneous: although the boats removed extraordinary volumes of aggregate, an infinitely greater amount remains beneath Erie waters. While researching this thesis, I learned that what produced the impact was the volume removed *plus* the location of the dredging.

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<sup>2</sup> John Phillip Coakley, "Evolution of Lake Erie Based on the Postglacial Sedimentary Record Below the Long Point, Point Pelee and Pointe-Aux-Pins Forelands" (PhD diss., University of Waterloo Earth Sciences, 1985), 108–09, 116–17. The work examines peat layers and the history of their formation.

<sup>3</sup> Peter J. Zuzek, *Port Stanley Coastal Risk Assessment*, prepared for the Corporation of the Municipality of Central Elgin (Waterdown, ON: Zuzek Inc., 2021), 39. Peter J. Zuzek, *Chatham-Kent Lake Erie Shoreline Study*, prepared for the Municipality of Chatham-Kent (Waterdown, ON: Zuzek Inc., 2020), 36. From 1955 to 2015, the horizontal bluff face (shoreline encroachment) from Wheatley to Hodovick Road receded an average of 1.39 metres a year, and Hodovick Road to Erie Beach receded at a rate of 0.57 metres a year; according to Zuzek, these recession rates doubled from 2015 to 2020.

Today, governments conduct most of the dredging in the Great Lakes.<sup>4</sup> They use the technology to deepen and maintain harbours and shipping lanes and to replenish beaches. They have also used it to make land such as the intensive infilling along Toronto's waterfront that took place over several decades in the twentieth century.<sup>5</sup> Private companies also dredged aggregate from the Great Lakes' water beds, shores, and banks to use in construction and manufacturing. In 1929, the Detroit Builders Association estimated that American ships that year would deliver to city docks two million tons of lake- and river-sourced aggregate for these purposes. The association predicted that Canadian operators would deliver 250,000 tons.<sup>6</sup>

Commercial dredging has escaped the attention of most historians who have addressed the history of Great Lakes' waters. The industry barely makes the pages, for example, of Harlan Hatcher's ground-breaking 1945 interdisciplinary study of Lake Erie.<sup>7</sup> Similarly, H.V. Nelles overlooked the industry in his otherwise extensive examination of Ontario's struggle to develop its natural resources during the early 1900s while under the shadow of the United States.<sup>8</sup>

What has appeared is local or, at best, regional or narrowly focused treatments. Charles Herdendorf, an Ohio geologist and oceanographer, wrote a brief and primarily technical

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<sup>4</sup> Much of this work is contracted to private companies.

<sup>5</sup> Derek Flack, "A Visual History of the Toronto Waterfront Before and After They Filled in the Harbour," *BlogTO*, n.d., [https://www.blogto.com/city/2011/07/that\\_time\\_toronto\\_filled\\_in\\_the\\_harbour/](https://www.blogto.com/city/2011/07/that_time_toronto_filled_in_the_harbour/). Tim Alamenciak, "Toronto's Waterfront: Dredging Up the Past to Build the Future," *Toronto Star*, August 6, 2013, [https://www.thestar.com/news/gta/2013/08/06/torontos\\_waterfront\\_dredging\\_up\\_the\\_past\\_to\\_build\\_the\\_future.html](https://www.thestar.com/news/gta/2013/08/06/torontos_waterfront_dredging_up_the_past_to_build_the_future.html) and "Building Bahrain," NASA: Earth Observatory, August 17, 2022, <https://earthobservatory.nasa.gov/images/150313/building-bahrain>. Globally, the use of dredging to build landforms continues to this day; an example is the ongoing expansion of Muharraq Island since the mid-1980s. The island is a part of Bahrain, a nation of islands in the Persian Gulf. The public land-building activity is a response to rapid growth in the island nation's population.

<sup>6</sup> Brief of Sundry Detroit Building Supply Dealers, "Sand and Gravel," Tariff Act of 1929, Schedule 16, United States, 641–42. The values are 1.8 million and 0.23 million metric tonnes respectively.

<sup>7</sup> Harlan Hatcher, *Lake Erie*, The American Lakes Series, edited by Milo M. Quaife (Indianapolis, IN: The Bobbs-Merrill Company, 1945).

<sup>8</sup> H.V. Nelles, *Politics of Development: Forests, Mines and Hydro-Electric Power in Ontario, 1849–1941*, 2nd ed. (Montreal: McGill-Queen's University Press, 2005).

history about the industry in his state.<sup>9</sup> William Lafferty, a Michigan marine historian, has documented the history of a number of the boats and companies in the industry, which operated primarily on Lakes Michigan, Huron, and Erie.<sup>10</sup> Mark Shumaker has also recently produced a history of the *Charles Dick*, one of the longest-running sand suckers in Canadian waters.<sup>11</sup> J.G. Battin and J.G. Nelson's 1978 interdisciplinary history of the development of Point Pelee National Park is one of very few works to provide a detailed historical account of waterbed mining's problematic effects.<sup>12</sup>

The past presence of this industry on the lakes raises all sorts of questions: What did people do with all this dredged aggregate? Why did they decide to dredge rather than dig it up from the ground? What did local communities think about this activity? How did it affect shorelines? How did waters divided into local, regional, national, and international jurisdictions affect commercial dredging operations?

Then there is the significance of the material mined: aggregate, which includes gravel and sand, built the infrastructure of modern society. It continues to be a staple of our global society. Of the 16 kilograms of non-metallic minerals that we used per person daily in 2011, nearly a third was sand, gravel, and crushed rock.<sup>13</sup> The only natural resource we use more than sand is water. We use fifty billion tons of sand a year to make everything from concrete and glass to computer chips as well as to replenish beaches and conduct fracking.<sup>14</sup> Each of these uses, however, requires different types of sand. Sand used for

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<sup>9</sup> Charles E. Herdendorf, "History of the Lake Erie Sand and Gravel Industry," *Inland Seas* 60, no. 3 (September 2004): 188–205.

<sup>10</sup> William Lafferty, "Odd Boats No. 1: *F.M. Osborne and Emmet J. Carey*," *The Detroit Marine Historian* 72, no. 11 (July 2019): 1–5. William Lafferty, "Odd Boats, Part Two: *F.M. Osborne and Emmett J. Carey*," *The Detroit Marine Historian* 72, no. 12 (August 2019): 1–5. William Lafferty, "Odd Boats, Part Four: Lake Sand Company," Unpublished manuscript from the author.

<sup>11</sup> Mark Shumaker, "National Sand and Material Company's *Charles Dick*," Unpublished manuscript obtained from the author.

<sup>12</sup> James Garnet Battin and James Gordon Nelson, *Man's Impact on Point Pelee National Park* (Toronto: National and Provincial Parks Association of Canada, 1978).

<sup>13</sup> Organisation for Economic Co-operation and Development, *Global Material Resources Outlook to 2060: Economic Drivers and Environmental Consequences* (Paris: OECD Publishing, 2018), 5, <https://www.oecd.org/environment/waste/highlights-global-material-resources-outlook-to-2060.pdf>.

<sup>14</sup> United Nations Environment Programme, *Sand and Sustainability: 10 Strategic Recommendations to Avert a Crisis* (Geneva, Switzerland: United Nations Environment Programme, GRID-Geneva, 2022), 2.

fracking is high in silica and has small, rounded grains. Plastering sand must be free of organic matter, such as leaves and twigs, as well as larger lumps; fabricators must also consider that sand used for this purpose lends its hue to the final product.<sup>15</sup>

While it might seem that more than enough sand exists to meet our needs, especially as the global volume of deserts grows as climate changes, surface aggregates are usually too degraded to be of use. Historically and in the present, the industry quarries and dredges not only because what is found on the surface is usually unsuitable for construction and manufacturing, but also because of the characteristics and quality of the material found in subterranean locations. Those sharp edges of sand found in riverbanks and lake beds, and even ocean beds, qualify it for use in concrete production.

Today, recognition is growing of the alarming environmental effects linked to waterbed aggregate mining. Recent studies and historical accounts warn of disruptions to fish-spawning grounds and waterbed lifeforms called benthic organisms.<sup>16</sup> There are worries that the activity can release harmful industrial contaminants buried in waterbeds into water.<sup>17</sup> Mining-triggered erosion can threaten infrastructure. So much sand was removed from the bed of the Yangtze River in the Shanghai region of China that in the 1990s large stretches of the riverbank collapsed and compromised bridge supports.<sup>18</sup> Moreover, the tremendous agility of the sand sucker in navigating waters of different depths makes it an

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Vince Beiser, *The World in a Grain: The Story of Sand and How It Transformed Civilization* (New York: Riverhead Books, 2018), 5.

<sup>15</sup> Beiser, *World in a Grain*, 8–10.

<sup>16</sup> Mathias G. Kondolf, Matt Smeltzer and Lisa Kimball, *Freshwater Gravel Mining and Dredging Issues*, prepared for Washington Department of Fish and Wildlife, Washington Department of Ecology, and Washington Department of Transportation (Berkeley, CA: Center for Environmental Design Research, University of California, 2001).

<sup>17</sup> G. Krantzberg, M. Bratzel, and J. McDonald, “Contribution of the International Joint Commission to Great Lakes Renewal,” *The Great Lakes Geographer* 13, no. 1, (2006): 30–31. P.G. Sly, “A Report on Studies of the Effects of Dredging and Disposal in the Great Lakes with Emphasis on Canadian Waters,” Scientific Series No. 77 (Burlington, ON: Inland Waters Directorate, Canada Centre for Inland Waters, 1977).

<sup>18</sup> Vince Beiser, “Sand Mining: The Global Environmental Crisis You’ve Probably Never Heard Of,” *The Guardian*, February 27, 2017, <https://www.theguardian.com/cities/2017/feb/27/sand-mining-global-environmental-crisis-never-heard>. Fred Pearce, “The Hidden Environmental Toll of Mining the World’s Sand,” *Yale Environment* 360, February 5, 2019, <https://e360.yale.edu/features/the-hidden-environmental-toll-of-mining-the-worlds-sand>.

ideal “getaway” vehicle for illegal mining.<sup>19</sup> In parts of India, sand pirates have begun to raid beaches for the increasingly precious commodity, creating a black market that dangerously destabilizes shorelines, riverbanks, and communities.<sup>20</sup> The rising sea levels and weather extremes of climate change foster even more worries about how this activity affects the resilience of shorelines and riverbanks.

Experts like Byrne have identified a troubling link in Lake Erie between past aggregate mining and the now chronic shortages in the sand that circulates in shoreline waters and replenishes beaches. A 2007 study by W.F. Baird & Associates, a coastal engineering firm, estimated that more than five million cubic yards of sand and gravel were extracted from the shores of Point Pelee National Park and its surrounding lakebed over the past 100 years.<sup>21</sup> The park is home to several endangered species, a critical stop in bird migration along the Mississippi flyway, and the last remaining stretch of undeveloped Lake Erie shoreline in Essex County. “The mining of the historical sandspit, and, to a lesser degree, the mining on the shoal have removed the underwater foundation for the beaches of Point Pelee National Park,” the report’s authors write. “Now the tip of the park is surrounded by deep water, which allows large waves to attack the shoreline during storm events.”<sup>22</sup> The point’s spit, a thin ribbon of sand and gravel that in the late 1800s stretched a mile (2.5 kilometres) into the lake, has all but disappeared.<sup>23</sup>

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<sup>19</sup> Eve Jones “Everything You Need to Know About Dredgers,” *Martide*, January 27, 2022, <https://www.martide.com/en/blog/all-about-dredgers>. For example, a hopper dredger can easily negotiate canals, rivers and seas, carry its own load and self-unload, a feature that allows it to access locations regardless of what docking infrastructure might be available. An amphibious dredger can operate as a vessel but also has legs that allow it to raise its hull above water.

<sup>20</sup> Paul Salopek, “Inside the Deadly World of India’s Sand Mining Mafia,” *National Geographic*, June 26, 2019, <https://www.nationalgeographic.com/environment/article/inside-india-sand-mining-mafia>.

<sup>21</sup> Because many historical works referenced and quoted in this thesis use Imperial measurements for volumes of aggregate, I am using this measurement throughout in order to make it more convenient for the reader to compare volumes. Roughly 1.33 cubic yards of dry sand or gravel equals roughly 1.7 metric tonnes.

<sup>22</sup> W.F. Baird & Associates, *Sustainable Management Strategy for Southeast Leamington—Phase 2 Report*, prepared for Essex Region Conservation Authority, (Oakville, ON: 2007), vi–v.

<sup>23</sup> John Phillip Coakley, *A Study of Processes in Sediment Deposition and Shoreline Changes in the Point Pelee Area, Ontario* (Burlington, ON: Hydraulics Research Division, Canada Centre for Inland Waters, 1976), 16, PDF number EN36-522-87-1976.

At Pelee Island, another centre of lake-based mining in the 1900s, erosion became chronic—and expensive. In 2020, the municipality of Pelee Island spent nearly \$600,000 to fortify a portion of its western shoreline to protect the main road because it also serves as a corridor for other infrastructures such as sewer and water lines.<sup>24</sup> Each year, the municipality must set aside funds to tackle erosion that threatens infrastructure and the beaches that support tourism, one of the island’s primary industries.

On the nearby St. Clair River, aggregate mining was a significant contributor to the removal of more than 32.5 million cubic yards of material over 150 years, according to the International Joint Commission.<sup>25</sup> That is enough material to build 600 CN Towers.<sup>26</sup> The removal of this material expanded the river’s capacity, and in the 1970s environmental scientists linked the change to increased phosphorous levels in Lake Erie.<sup>27</sup>

This thesis brings into focus an industry that has not only altered waterbodies, shorelines, and riverbanks in Erie’s western basin watershed but also contributed significantly to the establishment of the modern infrastructure that fostered the growth of the many southwestern Ontario urban and rural communities, including Windsor, Chatham, Wallaceburg, and Sarnia, and the municipalities of Lambton, Kent, and Essex Counties. The study explores how water-based aggregate mining unfolded in the region from the late 1800s to the early 2000s, with most of the attention paid to the industry’s most dynamic period in the first three decades of the twentieth century. Examining sand-sucker activity in the early 1900s provides an excellent opportunity to explore how commercial dredging affected perceptions of the relationship between water bodies that straddled

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<sup>24</sup> “Shoreline Protection a Priority in Pelee,” Canada Community-Building Fund, Association of Municipalities of Ontario, April 12, 2022, <https://www.buildingcommunities.ca/updates/shoreline-protection-priority-pelee>.

<sup>25</sup> International Upper Great Lakes Study Board, *Impacts on Upper Great Lakes Water Levels: St. Clair River Final Report*, (n.p.: International Joint Commission, 2009), 5.

<sup>26</sup> This calculation is based on the 40,500 cubic metres (52,972 cubic yards) of concrete taken to erect the tower. See Peter Kenter, “The CN Tower: Canada’s iconic tower,” *The Leaders*, 2017 (Toronto: ConstructConnect, 2017), p54.

<sup>27</sup> Jan A. Derecki, “Effect of Channel Changes in the St. Clair River During the Present Century,” *Journal of Great Lakes Research* 11, no. 3 (1985): 201–207, [https://doi.org/10.1016/S0380-1330\(85\)71764-9](https://doi.org/10.1016/S0380-1330(85)71764-9).

international borders, the landforms surrounding them, and the communities that lived on their shores. I will argue that this industry physically transformed both aggregate collection and delivery points. Attempts to tackle the issues that arose at the points of collection destabilized jurisdictional authority and political relations between governments. These attempts also sparked a shift away from the dominant view of waterbody processes being atomistic to one that embodied a more holistic vision of water ecology. Part and parcel of this shift were transitions in the perception of lake and river aggregate from an abundant resource to one that was scarce and in need of conservation, and a hardening of urban and rural divisions that bestowed an anti-American cast to the southwestern Ontario shoreline conservation movement.

I have organized this thesis into three main chapters. Each comprises two sections that explore, with different emphasis, how human and non-human actors responded to the chapter's central theme and their interactions. Chapter 2 describes the rise and development of commercial aggregate dredging in the region and provides an account of how the region's geology, ecology, geography, and history helped to form the industry. Chapter 3 explores how shoreline erosion induced by sand suckers triggered an investigation into shoreline processes and the approaches and concepts that engineers applied when assessing these shorelines. The chapter also traces how the erosion induced by sand suckers began to disrupt and undermine fundamental tenets of political and legal systems. Chapter 4 explores how the effort to "shore up" these systems and introduce protections against erosion further altered shoreline processes. The failure of these approaches to fix the boundary, or their merely limited and temporary successes, prompted civic action and scientific research that altered our understanding of lake processes.

Secondary contextual analysis of the industry might be lacking, but locating primary material for this study has not been difficult. Many historical records about sand sucking exist on the shelves of libraries and archives around the Great Lakes. The challenge in assembling and incorporating these records is how widely they are scattered and how those discovered at each location provide another perspective of substance on the industry.

This history is based on visits to the Bowling Green State University Archives' Historical Collection of the Great Lakes, the Rutherford B. Hayes Presidential Library, and the Ontario Archives. I have also accessed several online archives, including Library and Archives Canada, the U.S. National Archives, National Oceanic and Atmospheric Administration's map archives, the U.S. Army Corps of Engineers' digital library, Ohio and Michigan state archives, and the Internet Archive. Newspaper and trade magazine articles rounded out details on the dredging industry and local conflicts; dissertations and master's theses that address Great Lakes' Indigenous history proved to be invaluable resources for learning how this industry affected these communities; scientific studies and government reports similarly have been an essential resource for learning about lake processes and how they interact with dredging.

## 1.2 "The line on which a large body of water meets the land"

Past historical analysis of the Great Lakes region tended to focus on the region's community development as well as its role as a transportation route for shipping and the resource extraction that took place along its shore (including logging and mining for iron and coal), as well as the fishing industry. By the 1970s, the pollution crisis in Lake Erie, which had emerged twenty years earlier, fuelled interest in telling the Great Lakes' history from an environmental perspective. Historians such as William Ashworth used the ecological focus to critique how regional industrialization and development generated exports that produced wealth and environmental damage in the lakes. "Like the furs and the trees, the minerals would primarily be used elsewhere," he wrote in 1986. "It had become a pattern. Rip out a resource, ship it off for someone else's benefit, and call it development—and when the inevitable payment came due, rip out something else to raise the cash. The Lakes were a fountainhead of wealth, but that wealth was paradoxical: It could not seem to be obtained without taking it away."<sup>28</sup>

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<sup>28</sup> William Ashworth, *The Late Great Lakes: An Environmental History* (New York: Knopf, 1986), 81.

Ashworth primarily offered a narrative of exploitation; historians such as Terence Kehoe and William McGucken focused on the environmental cleanup of Lake Erie to examine the political intricacies of institutionalizing water quality control. Kehoe focused on the interactions between Great Lakes states and the U.S. federal government as these authorities evolved programming and policy to respond to the 1960s and 1970s grassroots campaign advocating greater controls over industrial pollution.<sup>29</sup> McGucken used ecological, industrial, political, scientific, engineering, and health perspectives to frame his transnational discussion of the history of cultural eutrophication in Lake Erie.

These authors do touch on the social and ideological conditions that fostered greater awareness of environmental issues, termed by one of the politicians at the time as “human well-being and health of natural ecosystems.”<sup>30</sup> McGucken, for instance, argued that a desire for a better quality of life drove most of the effort:

Residents from both countries wanted the lake as an amenity beside which to live or vacation and for outdoor recreational activities, including swimming, boating, and fishing. Some were aware and appreciated that the lake was the source of their domestic water supplies and also that a healthy economy required a healthy environment, while others viewed the lake as a splendid aquatic ecosystem whose integrity should be protected for its own sake and for aesthetic reasons. All had been appalled to learn that this large body of water was experiencing eutrophication and had immediately called upon their local state, provincial, and federal governments to take corrective actions.<sup>31</sup>

Nevertheless, these accounts focus primarily on the steps politicians, scientists, and community activists took to address the water crisis. The authors do not probe too deeply into what stakeholder actions might tell us about how they viewed the natural world and how their understandings conditioned their actions.

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<sup>29</sup> Terence Kehoe, *Cleaning Up the Great Lakes: From Cooperation to Confrontation* (DeKalb, IL: Northern Illinois University Press, 1997).

<sup>30</sup> William McGucken, *Lake Erie Rehabilitated: Controlling Cultural Eutrophication, 1960s–1990s* (Akron, OH: University of Akron Press, 2000), 12.

<sup>31</sup> McGucken, *Lake Erie Rehabilitated*, 11.

More recently, historians of Great Lakes waters such as Daniel Macfarlane, Lynne Heasley, Ramya Swayamprakash, and John Bukowczyk focus less on cataloging the actions that led to the formalization of water and resource policy and more on the cross-border relationships that these policies fostered and initiated. They do so to probe the characteristics of the watershed at large and the questions of how these evolved and how relationships between these and the watershed's inhabitants shaped the environment.

Many concepts underpin this contemporary approach; three of these are of particular value to this study. One of these is William Cronon's assertion of a dualism between "sublime, wild nature" and the constructed human world that informs underlying myths such as American exceptionalism.<sup>32</sup> Historically, this dualism not only led to the belief of humanity's dominance over nature, he asserts, but also to the extreme conclusion that to fix the environment, humanity had to go. The dualism "at the heart of wilderness encourages its advocates to conceive of its protection as a crude conflict between the 'human' and the 'non-human'—or, more often, between those who value the non-human and those who do not."<sup>33</sup> Cronon argues that the only way to bridge the divide is never to imagine "that we can flee into a mythical wilderness to escape history and the obligation to take responsibility for our own actions that history inescapably entails."<sup>34</sup> Adhering to this advice, therefore, involves identifying and separating the myth from actions and conducting a careful accounting and analysis of the human and non-human elements to understand how they have contributed to the building of society.

In his meditations on political ecology, Bruno Latour doubts the conceptual division between man and nature can ever be resolved. What is needed instead, he argues, is a reordering based on a rethinking of the definitions of and relationships between science, politics, and nature: "[M]y goal is thus not to overturn the established order of concepts but to describe the actual state of affairs," he writes. One of his proposals is that the

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<sup>32</sup> James Feldman and Lynne Heasley, "Recentring North American Environmental History: Pedagogy and Scholarship in the Great Lakes Region," *Environmental History* 12, no. 4 (October 2007): 951–958. The authors provide a summary.

<sup>33</sup> William Cronon, ed., "The Trouble with Wilderness," in *Uncommon Ground: Rethinking the Human Place in Nature* (New York: W.W. Norton & Company, 1995), 85.

<sup>34</sup> Cronon, "Trouble with Wilderness," 90.

actions of both humans and non-humans possess the agency to shape natural and cultural environments.<sup>35</sup> This concept also informs the approaches of recent scholarship—and this thesis—on the Great Lakes.<sup>36</sup>

The third concept informs studies of border communities in North America and elsewhere and proposes borders are capable of being simultaneously divisive and liminal. The concept draws on borderland-themed historical analysis, which Alan Taylor describes as examining “the peoples on both sides of a new and artificial border, as they often defied the control of their rival governments.”<sup>37</sup> Great Lakes environmental historians often depict border zones as reflections of the waters they occupy. The border’s identity is fluid and capricious, a sort of trickster capable of dividing and unifying. Borders are “complicated,” write Lynne Heasley and Daniel Macfarlane. “They are a barrier yet possible gateway; they are solid (on paper) yet porous; they can intensify competition or inspire cooperation; they can stir resentment or nurture understanding.”<sup>38</sup>

Examples of these three concepts often appear in the story of the commercial dredging industry in western Lake Erie’s watershed. Sand sucker operators frequently, and often illegally, crossed borders of all kinds to acquire the sand they needed and, in doing so, demonstrated the border’s fluidity. Their actions stirred resentment, and the boats’ activities triggered morphological changes that altered the land-changing processes of erosion and deposition, reflecting behaviours suggested in Latour’s argument that humans and non-humans sit together at nature’s table. Just as Cronon describes, we see

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<sup>35</sup> Bruno Latour, *Politics of Nature*, trans. by Catherine Porter (Cambridge, MA: Harvard University Press, 2004), 7 and 243. Latour further describes non-humans as anything from geological components to machines or manufactured products.

<sup>36</sup> Several examples can be found of the use of this concept in recent Great Lakes historical scholarship. See, for example, Daniel Macfarlane, “Dam the Consequences: Hydropolitics, Nationalism, and the Niagara-St. Lawrence Projects,” in *Border Flows: A Century of the Canadian-American Water Relationship*, eds. Lynne Heasley and Daniel Macfarlane (Calgary: University of Calgary Press, 2016), 10. Lynne Heasley, *The Accidental Reef and Other Ecological Odysseys in the Great Lakes* (East Lansing, MI: Michigan State University Press, 2021). Ramya Swayamprakash, “Hellgate to Highway: Island Making, Dredging and Infrastructure in the Detroit River, 1874–1938,” (PhD diss., Michigan State University, 2022).

<sup>37</sup> Alan Taylor, *The Civil War of 1812: American Citizens, British Subjects, Irish Rebels and Indian Allies* (New York: Vintage Books, 2011), 10.

<sup>38</sup> Heasley and Macfarlane, *Border Flows*, 10.

the idea of an untouched nature spurring conservation efforts at Point Pelee. Also revealed, when conservationist-minded efforts backfire, are the consequences of failing to include human activity as a component of natural environmental functions.

The thesis departs, in a small way, from how other Great Lakes historians have approached the idea of border or division. For instance, in *Border Flows*, a seminal exploration of the Canadian and American relationship over shared waters, many contributors describe the political border's function between jurisdictions in passive rather than active terms. These borders are the objects of trespassing: think of the arrival of invasive species like lamprey or zebra mussels or the spread of industrial water pollution. People impose divisions through conflict and peace negotiations and by drawing divisions on maps; people establish institutions and special arrangements to enforce their presence or even to remove them so that jurisdictions can pool their resources to tackle specific issues.<sup>39</sup> Often, borders represent a human-fuelled desire for fixity and stability, which authors such as Macfarlane reveal to be a flawed and unachievable goal.<sup>40</sup> Borders do not easily assume a physical form without the aid of some human technology. Instead, they remain conceptual, "a line (or more accurately a number of lines) on a map ... impossible to see on the lakes and unmarked and invisible in many remote areas."<sup>41</sup> Many authors in this book, therefore, characterize borders as human constructions. Consequently, even as these contemporary Great Lakes water historians attempt to embed the boundary's human creators within the natural environment, they restrict the boundary itself to the realm of human experience.

This narrative of boundary making and division as something separate from the realm of the unified human and natural world is problematic. Graeme Wynn, sensing the inconsistency between this interpretation and the objective of embedding human experience within nature, muses that perhaps the best way to deal with the issue is to "recalibrate our sense of borders as dividers." Using the example of Robert Frost's poem

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<sup>39</sup> Heasley and Macfarlane, *Border Flows*, 6–7 and 11.

<sup>40</sup> Daniel Macfarlane, "Dam the Consequences," in *Border Flows*, 138.

<sup>41</sup> Graeme Wynn, "Keeping Up the Flow," in *Border Flows*, 304–06.

“Mending the Wall,” in which two farmers meet to repair the stone wall that divides their farm fields, he argues that maintaining divisions “suggests a very human need for boundaries and the importance of custom and cooperation in maintaining them.” This scenario, however, perpetuates the idea of division as something inert and passive, a location or abstraction to be acted upon rather than an entity that possesses the agency to act on something else.<sup>42</sup>

Divisions are not just conceptual constructions, however—far from it. One of the most notable forms of division or barrier is the shoreline, “the line along which a large body of water meets the land.”<sup>43</sup> Shorelines deliver all the passive and conceptualized uses that Heasley and Macfarlane ascribe to water-based political boundaries.<sup>44</sup> They keep things out and they keep things in. They function as transition zones between water and land, and, in a similar way, as a place of trade and contact between communities.<sup>45</sup>

These divisions are also active and function independently of humans. Through processes such as erosion and deposition, shorelines reorganize and reinvent themselves; some of their landforms, such as Point Pelee, are even capable of roaming along the coast. Through these same processes of erosion and deposition, shorelines collect and release

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<sup>42</sup> John J. Bukowczyk, “The Production of History, the Becoming of Place,” in *Permeable Border: The Great Lakes Basin as Transnational Region, 1650–1990*, John J. Bukowczyk, Nora Faires, David R. Smith and Randy William Widdis (Pittsburgh: University of Pittsburgh Press, 2005), 1–4. Bukowczyk does present a more active vision of the boundary and discusses relationships between natural and figurative boundaries, but only to the extent that they informed capital formation and nation building in the Great Lakes region and beyond. In a later chapter, “Region, Border and Nation” (178–180), he further addresses boundaries but limits discussion to their conceptual and figurative dimensions. Latour’s take on the value of divisions is ambiguous. He sees the modernist division between nature and society as insurmountable. To unify “humans and non-humans” in a collective where all are seated as “citizens,” we “cannot simply bring objects and subjects together, since the division between nature and society is not made in such a way that we can get beyond it.” Nevertheless, Latour argues for a “new separation of powers” that makes it possible to redifferentiate the collective and makes a case for the use of hierarchies and institutions, both of which are boundary-making practices. In these latter instances, however, division appears to be envisioned as a tool to achieve a new order rather than as a non-human element deserving of a seat at the collective table. Latour, *Politics of Nature*, 232–33.

<sup>43</sup> *Oxford English Dictionary Online*, s.v. “shoreline,” March 2023, <https://www-oed-com.proxy1.lib.uwo.ca/view/Entry/92513336?redirectedFrom=shorelines>.

<sup>44</sup> Heasley and Macfarlane, *Border Flows*, 10–12.

<sup>45</sup> John R. Gillis, *The Human Shore: Seacoasts in History* (Chicago: University of Chicago Press, 2012), 39–47 and 52–67. See the discussion of “seaboard civilizations.”

nutrients from both water and land, an activity that enables them to shape their identities along a continuum of abundance.

Shorelines, as all borders do, facilitate not only their own migration but also that of others. Twice a year, the shorelines of the Lake Erie archipelago and Point Pelee offer respite to migratory birds. Similarly, humanity's first great migrations occurred along shorelines, as did later efforts to explore and expand territory.<sup>46</sup> For the First Nations who occupied the Lake Erie watershed for millennia, the shorelines of its archipelago provided a safe and efficient method of crossing that additionally provided bountiful access to foods such as fish, wild rice, and small game.<sup>47</sup>

Indeed, John Gillis argues that humans and shorelines have a special synergy; he captures this idea by describing humans as an “edge” species. This affinity can be seen in how people interacted with shorelines and how people distilled these landforms’ functions into the idea of division and boundary, which they applied in new ways, such as the imposition of political borders. Interactions between shorelines and people frequently produce conceptual effects such as those Heasley and Macfarlane describe. But these boundaries rarely remain in the realm of the conceptual. Even if these new divisions lacked material form, they still routinely produced physical effects, such as separating people into different groups. Former U.S. President Donald Trump’s failed election promise of building a giant wall between his country and Mexico is a good example of the concept and the manifestation of its physical effect. Even though this wall only partly materialized, the concept of intensified border restrictions that the wall represented informed federal regulations that charged and imprisoned more people than ever before for first-time border-crossing infractions and induced separations between parents and children.<sup>48</sup>

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<sup>46</sup> Gillis, *Human Shore*.

<sup>47</sup> Eliot Fackler, “Domesticating the Country: Indigenous Power and Colonialism in the Black Swamp of the Old Northwest” (PhD diss., University of Illinois at Chicago, 2020), 39–58, 75, 177.

<sup>48</sup> Adam Server, “A Crime by Any Name, *The Atlantic*, July 3, 2019, <https://www.theatlantic.com/ideas/archive/2019/07/border-facilities/593239/>. “Family Separation—A Timeline,” Southern Poverty Law Centre, March 23, 2022, <https://www.splcenter.org/news/2022/03/23/family-separation-timeline>.

Just as often, people's physical interactions with barriers provoke conceptualizations that generate a physical impact. Alain Corbin notes how pre-Enlightenment European communities typically viewed shorelines, and in particular coastlines, in biblical terms, as the division between order, as embodied in land, and chaos, as embodied in the sea that was seen as a remnant of the Great Flood. This view made shorelines a place to be avoided at all costs. A century later, with a growth in interest in the natural sciences, people began to see the shoreline as a gateway to world history. "The outline of the coast's visible landscape bore witness to the immensity of time; by the same token, it created the possibility of predicting future transitions,"<sup>49</sup> Corbin writes. With shorelines becoming, in effect, a form of time machine that connected people to other eras in the history of Earth and society, they began to attract visitors. The idea that shorelines could offer renewal and restore health similarly persuaded people to visit the very locations their ancestors had studiously avoided.

Divisions and barriers of all types play a central, material, and, most importantly, active role in the transition of ideologies. In a comparison of the development of the St. Lawrence Seaway and Niagara Falls, Macfarlane does explore the relationship between political borders and their physical outcomes.<sup>50</sup> So, too, does Ramya Swayamprakash's recent analysis of the Army Corps of Engineers' use of dredging and other techniques to improve navigation in the Detroit River.<sup>51</sup> Among other things, Swayamprakash explores how these physical interventions in border territory produced international tensions and local disruptions.

In both instances, these authors explore the inter-relationships between the physical and conceptual characteristics of the border. But they do so to identify the outcomes produced by material, structural forms termed "second nature." Cronon describes second nature as man-made infrastructure such as roads and railways that, over time, lose their identity as an "artificial intervention" and assume the stature of a "force of nature, a geographical

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<sup>49</sup> Alain Corbin, *The Lure of the Sea: The Discovery of the Seaside in the Western World: 1750–1840*, trans. by Jocelyn Phelps (Berkeley and Los Angeles: University of California Press, 1994), 106.

<sup>50</sup> Macfarlane, "Dam the Consequences," in *Border Flows*, 145.

<sup>51</sup> Swayamprakash, "Hellgate to Highway," 68–69.

power so irresistible that people must shape their lives according to its dictates.”<sup>52</sup> But no matter how the physical characteristics of these interventions might mimic the natural environment, they always represent a human realm.

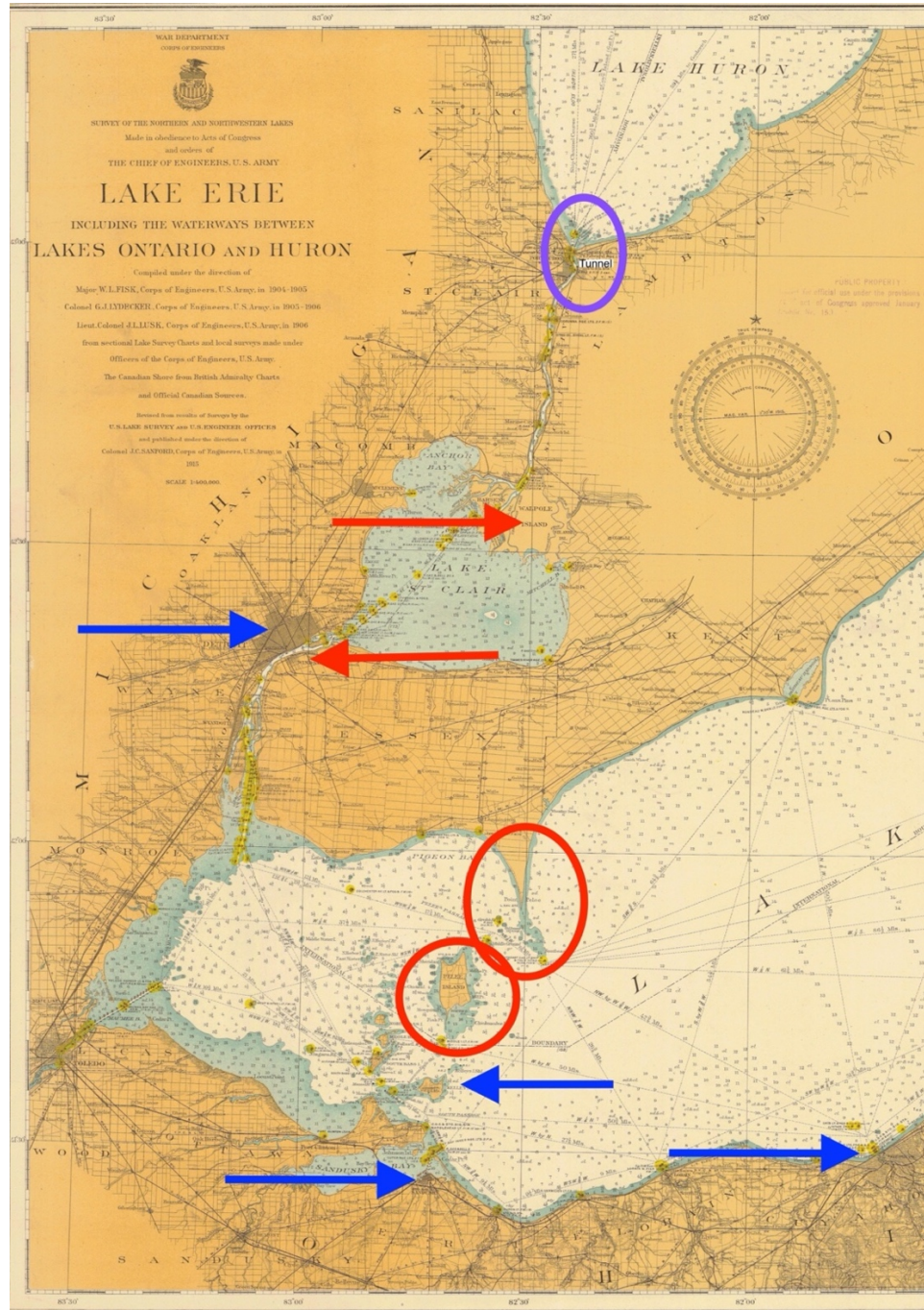
Ascribing divisions solely to the human imagination makes for a mode of analysis that is far too narrow to explore how non-human borders manifest and behave in the Great Lakes region. Exploring the physical and active processes of boundaries and divisions is essential to the study of sand sucker activity in Erie’s western basin and the St. Clair River. Sand sucker operations disrupted, revealed, and generated divisions. These divisions, in turn, influenced remedial actions that eroded conceptual and natural physical boundaries. Paying close attention to these processes will provide a greater understanding of the hows and whys of water-based sand mining and how it contributed to a changing view of water bodies in the Great Lakes region. It will also add a new dimension to the existing body of contemporary work on Great Lakes waters by contributing a fuller understanding of how divisions affect both human and non-human aspects of the lake environment.

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<sup>52</sup> William Cronon, *Nature’s Metropolis: Chicago and the Great West* (New York: W.W. Norton & Company, 1991), 72.



**Figure 1 General Chart of the Great Lakes, 1955. Source: Historical Map and Chart Collection, Office of Coast Survey, National Oceanic and Atmospheric Administration, U.S. Department of Commerce.**



**Figure 2 Detail of map, Lake Erie Including the Waterways Between Lakes Ontario and Huron, 1915. Identifiers added for Canadian and Indigenous (red arrows) and American (blue arrows) communities and for the main areas where sand sucker activity was studied (circles). Source: See Figure 1 above.**

## Chapter 2: The industry, the lake, and the river

### 2.1 A useful enterprise

The 1922 navigation season promised profitable dredging on the St. Clair River for the International Sand and Gravel Company. Just before work was scheduled to begin in May, the company's partners, W. Frank Deane and Captain William Nicholson, learned that their allotted share of spoils from the Dominion-controlled gravel shoals at the river's headwaters would increase by 10 per cent. One of the other four commercial dredging companies allowed to work the shoals had opted not to dredge there that year, government officials told International's owners. Therefore, from May to the navigation season's end in December, International would be allowed to remove 450,000 cubic feet (nearly 13,000 cubic metres) of gravel, enough to fill the foundations of nearly 900 homes with 6 inches (15 centimetres) of gravel.<sup>53</sup>

International was a subsidiary of Nicholson Transit Company, an American company that Captain Nicholson had established in 1919 in Ecorse, Michigan. International was likely established in 1921, soon after Deane, who was based in London, Ontario, bought *Annie Moiles*, the company's tugboat. Both the parent company and its subsidiary were new to the booming industry of commercial sand and gravel dredging. Yet, from day-to-day operations to the opportunities and challenges that arose, the fledgling International's experiences typified those of most involved in the water-based aggregate mining industry that had emerged in the Great Lakes fifty years earlier.

The steam-propelled *Annie Moiles* and International's barge, *Ontario*, were familiar sights to those who lived along the St. Clair River. [See Figure 2.] The tug had been built the year of Canada's Confederation and had worked the river for several owners hauling

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<sup>53</sup> June 27, 1922, Letter from H.B.R. Craig, Dominion Public Works Department's District Engineer in London, Ontario, to International Sand and Gravel Co. [Henceforth, ISGC], Institute for Great Lakes Research Collection, Bowling Green State University, Nicholson Transit Co. 52 Box 8 [Henceforth, IGLR Nicholson 8], Folder 16. The calculation was based on homes sized at 93 square metres or 1,000 square feet. But most of the company's allotment ended up in new roads serving Lambton and Kent Counties and in the Detroit Edison Power Company's giant coal-fired power-generation plant under construction across the river at Marysville. As mentioned in a footnote in Chapter 1, I am using the Imperial measurement for aggregate volumes because it is the standard used in most historical documents quoted and the consistency makes it more convenient for the reader to compare volumes.

barges filled with cargo such as lumber and coal. Since the turn of the century, however, the main mission for both vessels had been to pry sand and gravel from different points along the bed of the river that, together with Lake St. Clair and the Detroit River, connected Lake Huron to Lake Erie.<sup>54</sup>

Like the boats' previous owners, International also pumped aggregate from different points along the riverbed. But business success depended on access to the Dominion-controlled area at the river's headwaters. Each year, Lake Huron's powerful currents filled the headwater shoals, located near Point Edward, with high-quality gravel. (Government bureaucrats described the area as "above-tunnel," referring to the Grand Trunk railway tunnel beneath the riverbed between Sarnia and Port Huron, Michigan, to distinguish it from the generous deposits of sand and gravel that lay in the river to the south. [See Figure 2.]) These shoals were the only source of this essential construction material for nearby Canadian communities such as Sarnia, Wallaceburg, Dresden, Chatham, Windsor, and Sandwich. The gravel found there was also prized by high-paying Detroit buyers.

Gaining access to the headwater shoals had been tricky for International's owners. The Dominion and Ontario governments shared administration and monitoring of the commercial dredgers contracted to keep the navigation channel clear. In exchange, the companies retained the right to keep or sell the gravel dredged. (Some conditions applied: before selling to other buyers, the companies had to deliver pre-arranged volumes to Canadian municipalities). Late in the 1921 season, these governments had abruptly cancelled International's access even though they allowed the other companies working there to continue. International's owners suspected the action was taken because officials believed the operation to be American.

International's owners had reason to worry that being perceived as an American company might affect their chances of gaining the lucrative annual dredging contract. Resentment against American-owned dredging companies had been rising in the region. Many

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<sup>54</sup> "Annie Moiles (1867)," *Maritime History of the Great Lakes*, n.d., <https://images.maritimehistoryofthegreatlakes.ca/102988/data>.

residents believed the boats triggered shoreline erosion and their operators sold material that should have gone to Ontario municipalities instead to contractors in Detroit and Sandusky. Two years earlier, in response to the local concerns, the provincial government passed legislation that gave itself the authority to decide who could obtain leases to dredge sand and gravel deposits in Ontario waters. The new rules had ended commercial dredging at Pelee Island which had been mostly conducted by American boats. Believing that the new rules did not do enough to reduce the American presence, residents began pressuring the provincial government in January 1922 to ban all American sand suckers from Canadian Great Lakes waters.

So, in February 1922, Nicholson and Deane acted to assert the “Canadianness” of their operation. “As you are aware, our boats are of Canadian Registry, owned by a Canadian, and we employ nothing but Canadian labor and purchase all our supplies in Canada, therefore we feel we are entitled to same consideration given the other boats,” they wrote in a letter to H.B.R. Craig, the Dominion Public Works Department’s district engineer in London, Ontario.<sup>55</sup>

The April arrival of the contract renewal, followed by the even better news that their share of the above-tunnel spoils had increased, must have brought the enterprising pair a sigh of relief. Now the biggest challenge would be keeping up with demand. When Captain G.A. Sharen of Wallaceburg suggested that the company propose taking over the entire dredging contract above the tunnel for the Canadian municipalities, Nicholson and Deane roundly dismissed the idea because of a lack of capacity. “[W]e have come to the conclusion the municipal deliveries of 25,000 to 30,000 cubic yards material would be too big for us to handle, therefore would not care to enter this contract,” Dean wrote.<sup>56</sup> Everywhere communities clamoured for gravel to build roads and railroad beds, and for gravel and sand to make the concrete to pave roads and sidewalks and to erect factories, utility plants and public buildings. Despite its access to the headwater shoals, the fledgling operation simply didn’t have the resources to keep up.

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<sup>55</sup> February 7, 1922, Letter from ISGC to H.B.R. Craig, IGLR Nicholson 8, Folder 36.

<sup>56</sup> February 6, 1922, Letter from Frank Deane to Captain G.A. Sharen, IGLR Nicholson 8, Folder 90.

However, days after learning of their expanded share of the headwaters' shoals, disaster struck, dashing the pair's hopes for the season. On May 11, in a blanket of fog near Harsen's Island, the freighter *Hutchinson* struck the *Annie Moiles* as it headed to "the digging ground to put on a load for Dresden." The tug sank, and David Andrews, the tug's first mate, died while trying to bring the barge *Ontario*, which had been in tow, into the harbour at Algonac, Michigan.<sup>57</sup> The experience put the company "practically out of business for about six weeks," Deane later recalled.<sup>58</sup> The barge had also suffered damage that required extensive repair, and the company would spend well over \$5,000 (more than \$80,000 in today's dollars) to salvage the tug and repair both vessels.<sup>59</sup>

In an operation that boasted a narrow profit margin, the setback was immense, but Nicholson and Deane employed many strategies to struggle through the season. Where they could, they delayed bill payments, such as the bills for the crew's food and laundry (and found new suppliers when others cut them off for non-payment); they rented out the *Ontario* to another operator while waiting for repairs to the tug to finish; and last, but hardly least, they wrote overly optimistic letters about the pace of their operation's recovery to placate the Canadian and Ontario officials who, as early as July, began to complain that the company was far behind in meeting the conditions specified in its contract. The struggles must have paid off, and paid off well, because by early 1923, Nicholson and Deane were describing plans to add another tugboat and barge to their St. Clair operations.<sup>60</sup>

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<sup>57</sup> May 25, 1922, Letter from Frank Deane to H.B.R. Craig, IGLR Nicholson 8, Folder 36. "Destruction of Tug Results in Death," *Border Cities Star* (Windsor, ON), May 12, 1922, 3.

<sup>58</sup> February 19, 1923, Letter from Frank Deane to H.B.R. Craig, IGLR Nicholson 8, Folder 36.

<sup>59</sup> July 15, 1922, County of Wayne, Michigan Affidavit by Unnamed Derrick-Man on Barge *Ontario*, IGLR Nicholson 8, Folder 69. ISGC Correspondence Great Lakes Engineering Works, Michigan, IGLR Nicholson 8, Folder 38.

<sup>60</sup> February 19, 1923, Letter from Deane to Craig, IGLR Nicholson 8, Folder 36.



**Figure 3 Boat converted to a suction dredge on the St. Clair River, 1911. Source: Archives Ontario.**

### 2.1.1 Commercial dredging on the Great Lakes

Little about dredging's humble beginnings on the Great Lakes suggested its potential to evolve into the powerful commercial enterprise that it was by the time International arrived on the scene. Dredging these waters first started as a public service to make harbours and improve navigation to serve advancing settlement.<sup>61</sup> The commercial industry emerged in the third quarter of the 1800s as contractors and manufacturers of products such as bricks, lime, and mortar began to use boats to scoop out sand and gravel in shorelines and riverbanks. Previously, these operators had gone with their carts to

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<sup>61</sup> Ashworth, *The Late Great Lakes*, 59. Swayamprakash, "Hellgate to Highway," 8–9. This activity had significant impact on shorelines, especially at river mouths and in rivers.

these locations and dug out the sand and gravel by hand. Shorelines and riverbanks were targeted not only because of the quality of the materials found there, but also because the sand and gravel could be taken for free, or at least until an owner found out and decided to take legal action. As complaints from shoreline owners mounted, the commercial operators moved offshore.

Early sand sucker operators used buckets to scoop material. Hydraulic dredging, invented in the 1850s, made it possible to pull in larger loads and work in deeper waters by using pumps to suction sand and gravel. Nathaniel Lebby, an engineer, invented the technology to develop “portable steam pumps” to add and remove water from South Carolina rice fields. The U.S. Army asked Lebby to adapt his invention to use on a boat, and in 1856, the newly adapted *Gen. Moultrie* launched in New York. The vessel was so effective that the army subsequently converted several other vessels and, in 1902, successfully obtained congressional approval to build twelve purpose-built sand suckers, two of which went into service on the Great Lakes.<sup>62</sup>

Commercial use of the technology appeared in the Great Lakes region well before the turn of the century. William Lafferty identifies Schultz & Bond as the first company to use the technology. In 1874, the company’s owners added a steam pump to its steam barge, *Josephine*, and “harvested sand from near offshore [in Lake Michigan] directly off Milwaukee which it used in its own projects and to sell to others.”<sup>63</sup> Hydraulic suction dredging first appeared on Lake Erie in 1882, introduced by the Lake Sand and Gravel Company, owned by the Toledo-based Doville family.<sup>64</sup>

At first, these ambitious waterbed miners converted existing Great Lakes vessels to support their activities. [See Figure 3.] One popular choice was lumber hookers, the wooden freighters powered by sail or steam that had carried lumber from shoreline sawmills serving lumber camps on the Michigan peninsula. All five sand suckers of the Ohio-based Kelleys Island Lime and Transport Company were converted hookers; they

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<sup>62</sup> Lafferty, “Odd Boats, Part Four.”

<sup>63</sup> Ibid.

<sup>64</sup> Mark Shumaker, “*Charles Dick*.”

probably had been available at a discount after the Great Lakes timber industry collapsed in the late 1800s.<sup>65</sup> Steam barges and passenger ferries also became contenders for sand suckers as the industry developed.

By the early 1900s, expensive, purpose-built boats joined the retrofits. One of the earliest was the *H. Dahlke*, built in 1908 in Manitowoc, Wisconsin, for the Lake Sand Company, the third of its kind built from steel. The *Charles Dick*, built in Collingwood, Ontario, in 1922 for \$400,000, was Canada's first sand sucker constructed from steel. [See Figure 4.] Built with a shallow bottom like a canaller (specially designed freighters that could squeeze through the narrow canals that linked many of the Great Lakes), the Canadian vessel could hold 2,000 cubic yards of sand and gravel. Its "well deck was divided into two open hopper-style cargo holds, both 60 feet in length" that gave the vessel the ability to sort and clean its spoils as it pumped them from the waterbed.<sup>66</sup>



**Figure 4 Charles Dick. Source: Historical Collections of the Great Lakes, Bowling Green State University.**

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<sup>65</sup> William Lafferty, email message to author, January 12, 2023. The company operated on Kelleys Island in Lake Erie, 5 kilometres south of the Canadian border, and in Sandusky, Ohio. W. Wes Oleszewski, "Lumber Hookers the Backbone of the Great Lakes Timber Industry: How They Developed and Vanished," posted June 11, 2021, <https://www.youtube.com/watch?v=VX4tg-00f48>.

<sup>66</sup> Shumaker, "*Charles Dick*."

To dredge, boats approached the beach or sandbar and the captain sent a crew member in a skiff to moor the dredge, writes Charles Herdendorf:

A kedge anchor [a light, secondary anchor] would then be placed off the stern to hold the vessel in position normal (perpendicular) to the shore. Next the suction hose, fitted with a hood-like end piece, would be positioned at the shoreline and pumping would commence. As the hold filled with sand, the kedge line would be pulled in, moving the vessel into deeper water.<sup>67</sup>

A seemingly endless demand for aggregate from the cities emerging on Great Lakes' shores spurred the development of both the boats and the industry.<sup>68</sup> South of Lake Erie, the materials were needed to build railbeds, roads, and other infrastructure. George Homegardner, a Sandusky contractor, would have likely used gravel products from his relatives' dredging company when grading the Lake Erie and Western Railroad near Sandusky, local roads, and a 12-mile (19-kilometre) section of the double-tracked Cincinnati, Hamilton and Dayton Railway.<sup>69</sup> His uncle and cousin (both named John) were among the first in that area to mine aggregate from Lake Erie. John Jr. Homegardner's companies—Lake Erie Sand Company and Homegardner Sand Company—routinely fulfilled city contracts and industrial construction contracts in the early 1900s.<sup>70</sup>

North of the border, railroad and road development similarly propelled the greatest demand for these materials. In 1901, Ontario passed the Highway Improvement Act and dedicated \$1 million a year to road construction. As more and more Canadians acquired

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<sup>67</sup> Herdendorf, "History of the Lake Erie Sand and Gravel Industry," 190–91.

<sup>68</sup> The commercial industry obtained the aggregate for use in a company's own construction projects or sold to others for construction and manufacturing (often both). The commercial industry primarily focused on pumping from deposits that suited their purposes. But in cases where public projects offered access to usable materials, the industry could also become involved. For example, private companies dredged the gravel shoals at the headwaters of the St. Clair River to aid navigation.

<sup>69</sup> Hewson L. Peeke, *A Standard History of Erie County, Ohio*, vol. 2 (Chicago: Lewis Publishing Company, 1916), 810.

<sup>70</sup> "[Indecipherable] Passed Over: Supporters Found Too Much Opposition to Take the Risk—Hayes Avenue to Be Paved—Other Important Council Business," *Sandusky Star-Journal* (Sandusky, OH), July 8, 1902, 3. "Breakfast Table Talk," *The Sandusky Register*, July 11, 1919, 12. "Contracts Let for '20 Roads Materials," *The Sandusky Star-Journal*, February 17, 1920, 13.

cars, road construction became urgent; the province dedicated a ministry to highways in 1916 and, a year later, opened its first concrete highway. By 1919, the Dominion government stepped in by allocating \$20 million to the provinces to develop their system of roads. All this investment meant that the miles of hard-surfaced road in the country increased from less than 10,000 (16,000 kilometres) before 1919 to more than 70,000 (114,000 kilometres) in 1930.<sup>71</sup>

Concurrent shifts and innovations in the North American building industry also drove the burgeoning need for aggregate. Concrete and cement were increasingly used in the United States and Canada for infrastructure such as canals and bridge abutments. Made from a blend of gravel, sand, cement, and water, concrete is “a liquid medium that can be poured into place, where it hardens or cures, to achieve a solid mass of great compressive, but little tensile, strength.” Portland cement, an artificial cement made from clay and lime popularized in the 1880s, had become the standard for infrastructure such as piers and the “compressive members of multi-storey buildings.”<sup>72</sup> So too had reinforced concrete—concrete that contains iron or steel reinforcing bars to improve its tensile strength, the ability to be stretched or lengthened without cracking or shattering. Together, these had become the materials of everyday construction, from paved roads and railroad bridges to building materials such as columns, beams, slabs, and foundations.

Indeed, reinforced concrete presented significant advantages to timber frame construction.<sup>73</sup> For one, the material was fire-proof. Concrete’s initial plasticity meant it could assume forms that wood never could, a characteristic that lent itself to large-scale construction. Concrete construction was cheaper than timber frame construction. Mixing concrete on site meant faster completion of projects. More straightforward tasks than those that might have involved trades such as masonry or carpentry meant labourers

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<sup>71</sup> John T. Saywell, *Across Mountain and Muskeg: Building the Canadian Transportation System*, Discussion Paper No. 22 (Ottawa: Economic Council of Canada, 1975), 146, 120–21. The King’s Way connected Toronto and Hamilton. This highway was made of concrete slabs 5.5 metres wide that ranged from 15 centimetres at their edges to 20 centimetres thick in their centres.

<sup>72</sup> Amy E. Slaton, *Reinforced Concrete and the Modernization of American Building, 1900–1930*, (Baltimore, MD: Johns Hopkins University Press, 2001), 15.

<sup>73</sup> *Ibid.*, 15–18.

needed fewer skills, so they could be paid less. Moreover, three of its four main ingredients—sand, gravel, and water—were resources easily found in some abundance nearby, both on land and in water, and could often be acquired for free or for a low cost. Perhaps unsurprisingly, cement production in the United States surged in the early 1900s. By 1910, U.S. cement production had reached nearly 78 million barrels a year; it reached more than 137 million barrels a year by 1923.<sup>74</sup>

Aggregate consumption followed a similar curve, and over the first decades of the twentieth century commercial dredging rapidly evolved into a prominent supplier of aggregate to Great Lakes communities. The total amount of sand and gravel mined in Ontario jumped from just over 1.1 million tons in 1918 to well over 10 million tons in 1930; dredging represented just under a third of the total volume in the latter year.<sup>75</sup> In 1928, U.S. ships operating on the American side of the St. Clair River and Lake St. Clair mined 1.6 million tons of sand and gravel.<sup>76</sup> In 1929, waterbed mining in the Canadian portion of the Great Lakes basin generated more than two million tons of aggregate.<sup>77</sup> Indeed, by the latter half of the 1920s, the industry's operations in Canadian waters (which included both American- and Canadian-owned companies) was so powerful that pit gravel producers in Michigan and Ohio complained to the U.S. federal government and lobbied to introduce a protective tariff on Canadian sand and gravel imports.<sup>78</sup>

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<sup>74</sup> United States Department of Commerce, *Statistical Abstract of the United States 1925* (Washington, DC: Government Printing Office, 1926), 709. One barrel of Portland cement equals about 375 pounds (170 kilograms).

<sup>75</sup> Ontario Bureau of Mines. *Ontario Bureau of Mines, 1919 Being Vol. 28 and Consisting of Parts 1 and 2, Part 1* (Toronto: Legislative Assembly of Ontario, 1919), 2, 44. Ontario Department of Mines, *Fortieth Annual Report of the Ontario Department of Mines Being Vol. 40, Part 1, 1931* (Toronto: Legislative Assembly of Ontario, 1931), 2, 39. While figures about what proportion lake- and river-based mining contributed to the 1918 figure are unavailable, provincial officials did note that “large quantities of both have been recovered by dredging or sand-sucking vessels, principally in the neighbourhood of the larger towns and cities along the border.”

<sup>76</sup> Brief of Sundry Detroit Building Supply Dealers, 641–642.

<sup>77</sup> Ontario Department of Mines, *Fortieth Annual Report*, 39.

<sup>78</sup> Statement of William P. Kelly, Cleveland, Ohio, Representing Dolomite (Inc.), of Ohio, the Sturgeon Bay Co., of Wisconsin, and the Wagner Cos., of Ohio, “Sand and Gravel,” Tariff Act of 1929, Schedule 16, 634–38.

Most of those who became involved in mining Lake Erie's western basin and the St. Clair River did so to support their activities as construction contractors or suppliers. In Sandusky, John H. Homegardner was a well-known materials supplier. He had been born into the family business, Homegardner Sand Company, founded by his father. A long-time city councillor, John Jr. partnered with William Hendrickson, another familiar Ohio name, to found the Sandusky Terminal Dock Company and the Lake Erie Sand Company, which mined sand from the waters around Fishing Point at the southern end of Pelee Island for twenty years.<sup>79</sup> Hendrickson owned the Buckeye Sand Company, another commercial dredging business. The Kelley Island Lime and Transport Company, which operated quarries on the Marblehead Peninsula and at Kelleys Island and was the region's largest supplier of lime and quarried crushed stone, had also expanded into waterbed mining in 1905. This company frequently dredged across the border at Fishing Point (a short sail from company docks at Kelleys Island) and at Point Pelee. [See Figure 6.]

In Windsor, Charles W. Cadwell, a Canadian-born contractor who had learned how to build concrete sidewalks while working for the Cleveland Silix Stone Company in Detroit, established the Cadwell Sand and Gravel Company in 1904. The company initially built sidewalks in Windsor and Tilbury, but within a decade had expanded into road building and, through the development of subsidiaries, other activities, including commercial dredging.<sup>80</sup>

Several other construction companies in Windsor also became involved in dredging. Like Cadwell, Chick Construction, founded by Thomas Zachariah Chick, built sidewalks and sewers and laid pavement and asphalt. Merlo, Merlo and Ray, which owned the tellingly named River Sand Brick Company in Windsor, was involved in similar work.<sup>81</sup>

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<sup>79</sup> Fish Point is the formal name of Pelee Island's southern-most point, but during the early twentieth century, this landform was routinely referred to as Fishing Point. Therefore, to avoid reader confusion, I have adopted the colloquial name as the main form of reference throughout this thesis.

<sup>80</sup> R. V. Sharp, "Growth of Cadwell Sand Keeps Pace with City," *The Windsor Star*, February 28, 1925, 7; "New \$800,000 Corporation to Take Over Cadwell Business," *The Windsor Star*, July 31, 1913, 1; "Cadwell Silix Stone Co.," *The Windsor Star*, April 5, 1897, 4.

<sup>81</sup> Francis X. Chauvin, *Men of Achievement, Essex County*, Vol. 1. (Tecumseh, ON: Chauvin, 1927), 32-33 and 48-49 and Chauvin, *Men of Achievement, Essex County*, Vol. 2. (Tecumseh, ON: Chauvin, 1929), 55.

On the water, these sand sucker operators often worked closely together. When they owned Fishing Point, Hendrickson and Homegardner allowed Kelley Island boats to dredge there for a royalty; Cadwell did the same at the sandbar he controlled at Point Pelee. In 1919, when Hendrickson and Homegardner's Pelee Island sand operations became embroiled in legal action initiated by the municipality of Pelee Island and the Ontario government, the Sandusky businessmen sought the help of Oscar Fleming, a Windsor lawyer, the municipality's former mayor, and a past-president of the Windsor Board of Trade who frequently partnered on ventures with Cadwell.<sup>82</sup> Similarly, International's business records show routine business dealings with Chick Contracting and Cadwell.<sup>83</sup> Indeed, both International's tug and barge had at one time been the property of Cadwell, reflecting the frequent practice of these companies acquiring vessels from each other.<sup>84</sup>

When attracting business, these companies competed fiercely for lucrative contracts as either construction contractors or suppliers. Marketing their knowledge and expertise with the fabrication of concrete as well as with the materials that went into these products became a powerful method to gain a competitive edge.<sup>85</sup>

Different mixtures of concrete produced different results. Some might harden faster than others or be more appropriate for one type of structure but not another. By the early 1900s, standardizations and specifications to achieve consistent effects and control

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<sup>82</sup> Copy of Judgement of Lennox, J., Delivered February 14, 1920, *The Attorney General Ex Bel. The Corporation of the Township of Pelee and Others v. Homegardner*, Archives Ontario Despatches, RG 8-20 Box 23 [Henceforth AO Despatches]. Francis X. Chauvin, *Men of Achievement, Essex County*, Vol. 1 (Tecumseh, ON: Chauvin, 1927), 12–13. *Report of the Secretary of State of Canada for the Year Ending March 31, 1911* (Ottawa: C.H. Parmalee, Printer to the King, 1912), 261. In the 1920s and 1930s, Fleming acted as a vocal proponent of developing the St. Lawrence Great Waterways System and lobbied for the project in Washington. Along with being a director of Cadwell Dredging Company Limited and Cadwell Sand and Gravel Company Limited and chairman of the board of directors of Cadwell's Limited—the company that consolidated Cadwell's many businesses—Fleming was a director of the Ontario Gravel Freighting Company Limited, which was incorporated in 1911 to suck sand in Canada and elsewhere, to manage docks, wharves, and warehouses and to build boats.

<sup>83</sup> January 10, 1923, Refund Letter from ISGC to Chick Contracting Co., IGLR Nicholson 8, Folder 15. December 18, 1922, Limited Notice of Payment from Cadwell Sand and Gravel Company, to ISGC, IGLR Nicholson 8, Folder 8.

<sup>84</sup> “Annie Moiles (1867),” *Maritime History of the Great Lakes*. See, for example, the list of owners.

<sup>85</sup> Slaton, *Reinforced Concrete*, 166.

quality were emerging. These were produced by groups such as the American Society for Testing Materials, the American Society of Civil Engineers, and the Canadian Engineering Standards Association. Governments also recognized the need for quality and consistency in concrete. In 1912, the U.S. National Bureau of Standards (today, the National Institute of Standards and Technology) published its first specifications for Portland cement. The bureau would become responsible for testing the materials used in government-commissioned construction.<sup>86</sup>

Taken on their own, however, these early standards were no guarantee of a consistent product; they were not specific enough in the guidance they offered. A case in point were the 1915 Canadian Society of Civil Engineers' standards and general specifications for concrete. These specifications included general definitions of concrete ingredients, including sand, gravel, crushed stone (fabricated gravel), water, and mortar, and touched on how to calculate loads for structural components such as columns, beams, and slabs; they also described aspects of "workmanship," including how to store sand and gravel and how to mix and deposit concrete. But the information contained few specifics about the dozens of items listed. For instance, when describing how to deposit concrete, the guide advises to deposit in "small quantities" and manipulate it "in such a manner as to ensure perfect adhesion without specifying the manner that would achieve this effect."<sup>87</sup>

An expert knowledge of the characteristics of the aggregate used in construction and knowing what material was right for the job became key instruments for the canny contractor to distinguish himself from his competitors and promote his company to clients. This expertise emanated not only from the scientific knowledge of how materials interacted with each other, but also from the hands-on experience and intuitions of the person who judged how to apply the material.

At the 1909 Cement Concrete Association's annual convention in Ohio, for instance, Charles Cadwell attributed his company's success at building sidewalks to a fine-tuned

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<sup>86</sup> Slaton, *Reinforced Concrete*, 69.

<sup>87</sup> Canadian Society of Civil Engineers, *Standard General Specifications for Concrete and Reinforced Concrete* (Montreal: Engineering Institute of Canada, 1915), 22.

technical expertise that mimicked the rigour of a scientific trial. Every contractor “should have positive proof that the materials with which he works are of the very best, and he must treat those materials in accordance with their properties. Cement should not be used that sets too quickly, in warm season, and yet a quick setting cement is required in colder season.”<sup>88</sup> Yet the approach was artistic as much as it was “scientific,” channelling a seemingly innate knowledge of natural processes that bordered on the mystical: “I believe in lots of water in concrete for the top coat,” Cadwell confided to his audience. “We float our top coat on sidewalks as a batter. I do not like to finish it too soon. ... I have delayed this operation till twelve or one o’clock at night to avoid finishing too soon.”<sup>89</sup>

Awareness of the property of materials that went into concrete and an ability to judge their quality became another selling point. Failure “comes from bad materials, for in different localities the sand and gravel [are] more or less scarce, much faulty material is used, and contractors take chances, as material is hard to get, and highly expensive,”<sup>90</sup> Cadwell noted. Size, shape, uniformity, moisture content, colour, and mineral composition increasingly defined aggregate quality. The location of deposits often became a metonymic way to refer to these qualities. Sometimes such references were general; for instance, “riverbank” or “lake” sand connoted good quality for concrete because it was “sharper” or more angular than what might be found on land and exposed to the elements. Locations could also be specific to certain deposits. Lake sand from Maumee Bay was known to be slightly brown, whereas sand found off the shores of Pelee Island at Fishing Point was so uniform in colour that it could also be used to make plaster.<sup>91</sup> The “sharp, coarse sand” from Fishing Point was also “in great demand for concrete.”<sup>92</sup> For Cadwell and others pinning their fortunes on concrete contracting, no

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<sup>88</sup> C.W. Cadwell, “Twenty Years’ Experience in Cement Walk Building,” in *Construction: A Journal for the Architectural Engineering and Contracting Interests of Canada*, edited by Ivan S. Macdonald, et al., Vol. 2 (Toronto: Consolidated Press, 1909).

<sup>89</sup> National Association of Cement Users, *Proceedings of the Fifth Annual Convention*, Vol. 5 (Cleveland, OH: N.p., 1909), 391.

<sup>90</sup> Cadwell, “Twenty Years’ Experience,” in *Construction*, 75.

<sup>91</sup> Statement of L.C. Hinslea, Representing the Kelley Island Lime & Transport Co., Cleveland, Ohio, and Others, “Sand and Gravel,” Tariff Act of 1929, Schedule 16, 640.

<sup>92</sup> “Canada Forbids Taking of Sand at Pelee Island by Sanduskians: Appeal Case,” *The Sandusky Star-Journal* (Sandusky, OH), June 28, 1920, 7.

better place existed to obtain these materials than the waters of Lake Erie and the rivers that fed them.

Yet pulling sand and gravel out of water presented all sorts of risks. Boats, barges, and tugs frequently collided with other vessels in crowded harbours and busy navigation lanes. As was the case for the broader Great Lakes shipping industry, sinkings were common.<sup>93</sup> In May 1925, the *Kelley Island*, a sand sucker named after its Ohio owner, Kelley Island Lime and Transport Co., capsized near Point Pelee because of rough waters, killing nine of its crew of 16.<sup>94</sup> A decade later, in 1936, the *Sand Merchant*, a sister ship of the *Charles Dick*, capsized in rough waters on route to Cleveland, killing 19 people. The vessel, owned by the National Sand and Material Co. Ltd. of Welland, was the second sand sucker to sink on the Great Lakes that year.<sup>95</sup>

International's barge, *Ontario*, had also seen its share of disasters, such as the 1915 explosion of its boiler. (It was owned by a Cadwell subsidiary at the time.) The blast injured a deckhand and hurled another crew member, sleeping over the boiler, into the St. Clair River.<sup>96</sup> Six years later, in 1921, the barge struck the Pere Marquette railroad bridge at Wallaceburg. The incident damaged the "draw span" of the bridge. "As a result, all traffic was delayed 18 hours and it was necessary to transfer passenger trains," wrote J.J.

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<sup>93</sup> *Lake Erie Shipwrecks and Maritime Tales* (Columbus: Ohio State University, 2017), <https://ohioseagrant.osu.edu/products/i0049/lake-erie-shipwrecks-amp-maritime-tales>. While the Ontario Department of Mines had begun to keep records of mining accidents by 1920, it did not include these incidents in its statistics, even though accidents involving sand suckers frequently injured or even killed crew members and generated considerable repair bills and legal costs. Of 23 sinkings in the American waters surrounding the Lake Erie archipelago listed in *Lake Erie Shipwrecks and Maritime Tales*, three were sand suckers and a further two were linked to the stone trade. By way of comparison, at least four other boats that sank carried coal as cargo. The wrecks took place from the early 1800s to the mid-1900s; most occurred in the late 1800s and first decades of the 1900s.

<sup>94</sup> "Boat Capsized: Seven [sic] Drown at Point Pelee," *Daily British Whig*, May 4, 1925, 1. News story dated June 12, 1925, in *Echo Soundings: Marine News from the Amherstburg Echo, 1920–1929*, Vol. 17 (Amherstburg, ON: Marsh Collection, 2021), 99 and "Nine Sailors Perish When Shipfounders in Storm-Tossed Erie," *The Globe*, May 4, 1925, 1. As frequently as these boats sank, salvagers raised them for repair or parts. A little more than a month after it sank, *Kelley Island* was raised by Reid Wrecking Co. of Sarnia.

<sup>95</sup> "18 Men, 1 Woman Are Drowned as Sand Ship Sinks Off City: 7 Saved," *Cleveland Plain Dealer*, October 19, 1936, <https://ohioshipwrecks.org/shipwreckdetail.php?Wreck=14>.

<sup>96</sup> "Boiler Explodes on Gravel Barge, *The Globe*, August 12, 1915, 11.

Corcoran (likely superintendent of the railroad) to International's owners.<sup>97</sup> The barge also collided with the Bell Telephone telegraph wires "over top of the bridge and broke some of them." International's insurer ended up shelling out \$250 to Bell for the damages.<sup>98</sup>

Finding the labour to support these operations was also challenging. International's records show that in 1922, the company employed a steady stream of deckhands and "firemen" (workers who stoked coal to fuel steam-powered engines). Few lasted in these jobs for more than a month. James Nicols, paid \$80 a month to be a fireman on the *Annie Moiles*, was one of the exceptions: he worked from March to September. But Gordon Perry from Tupperville worked as a deckhand for six days in August at a rate of \$55 per month. Isaac Hasse worked on *Ontario*, possibly as a deckhand, from August 2 to 18 for \$55 a month before falling ill and being hospitalized in Sarnia for typhoid. (The hospital asked International to pay his bill.) *Ontario* fireman George Sullivan, hired in June, lasted only a day.<sup>99</sup>

"Finding deckhands and "black hole" crew was always a problem on the lakes, especially for smaller firms," writes William Lafferty.<sup>100</sup> Poor pay undoubtedly was a factor. International paid its unskilled deckhands and firemen working the St. Clair River well below the per-hour wage average paid to unskilled workers elsewhere in Ontario.<sup>101</sup> These low wages represented the de-skilling of Great Lakes crews as the need for "independent and skills-based sailors as defined by sailing ships and small companies" declined with the advent of "steel ships and intensive bulk freight commodity transportation."<sup>102</sup>

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<sup>97</sup> May 22, 1923, Letter from J.J. Corcoran, Superintendent, to ISGC, IGLR Nicholson 8, Folder 47.

<sup>98</sup> Statement of Protection and Indemnity Claim Case of the Barge *Ontario* (Disaster October 10, 1921) Affidavit of Captain (T.C. Crawford), 1 and 3, IGLR Nicholson 8, Folder 75.

<sup>99</sup> International Sand and Gravel Co. IGLR Nicholson 8, Folder 52.

<sup>100</sup> Lafferty, email to author.

<sup>101</sup> Mary MacKinnon, "New Evidence on Canadian Wage Rates, 1900–1930," *Canadian Journal of Economics*, 29, no. 1 (February 1996), 119.

<sup>102</sup> Matthew Lawrence Daley, "An Unequal Clash: The Lake Seamen's Union, the Lake Carriers' Association, and the Great Lakes Strike of 1909," *The Northern Mariner / Le marin du nord* 18, no. 2 (Spring 2018), 119.

Technological development had driven the transition, transforming shipping “into a high-volume, low-margin operation tied to expensive specialized equipment.”<sup>103</sup> Years earlier, in a long and nasty three-year strike that began in 1909, the Lake Seamen’s Union had pushed to improve pay and working conditions. By that time, however, many lower-skilled workers that would have worked on sand suckers, such as firemen and labourers and the much higher skilled tugboat captains, would have been members of the National Longshoremen’s Association through local chapters.<sup>104</sup> This association tended to forge agreements with employer associations, and its willingness to strike deals effectively undermined the 1909 strike and, consequently, helped erode union power on the Great Lakes. Nevertheless, from time to time disputes arose, making uncertain working relationships. A month-long strike in 1917 by 4,000 members of unions representing workers on dredges slowed dredging to a trickle and gained workers increased pay. In April 1919, dredge workers once again walked off the job to fight for salary increases and an eight-hour workday.<sup>105</sup> Later that same month, an industrial board hearing in Cleveland awarded the workers a raise of \$15.25 a month over their 1918 wage scales.<sup>106</sup>

Despite these challenges, sand sucker operators held a significant advantage over their landed counterparts, which was the vast and watery territory where they conducted most

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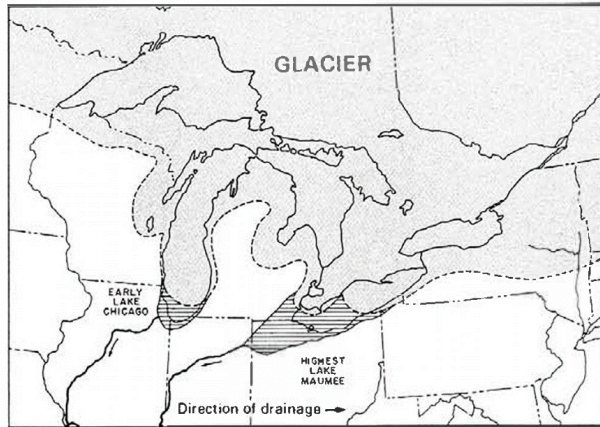
<sup>103</sup> Ibid.

<sup>104</sup> Daley, “An Unequal Clash, in *Northern Mariner*, 121. John R. Commons, “Types of American Labor Unions: The Longshoremen of the Great Lakes,” *The Quarterly Journal of Economics* 20, no. 1 (November 1905), 78.

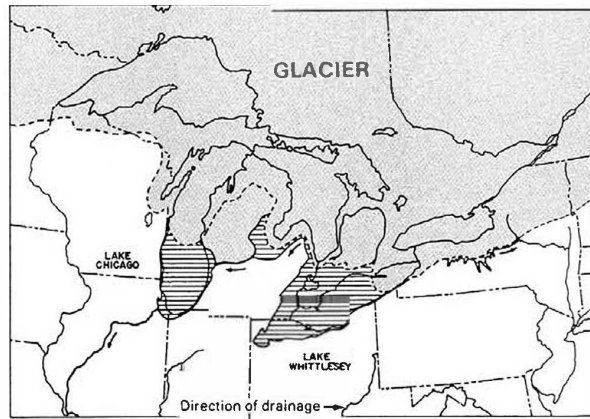
<sup>105</sup> Daley, “An Unequal Clash, in *Northern Mariner*, 121. An untitled news story dated June 1, 1917, in *Echo Soundings: Marine News from the Amherstburg Echo, 1915–1919*, Vol. 15 (Amherstburg, ON: Marsh Historical Collection, 2015), 70. “Dredge Workers Go On Strike for Eight-Hour Day, *The Sault Star* (Sault Ste. Marie, ON), March 31, 1919, 1. “Five Buffalo Marine Unions Threaten Strike,” *The Buffalo News*, March 31, 1919, 1. Lydia J. Ryall, *Sketches and Stories of the Lake Erie Islands* (Norwalk, OH: The American Publishers, 1913), 184–85. It’s unclear whether workers on sand suckers were divided along racial or ethnic lines. Labourers’ names on International’s St. Clair River vessels show British, French, and Eastern European derivations. The National Sand and Material Company drew crews from the Great Lakes region and the Canadian Maritime provinces. Shumaker notes that throughout its operation, National Sand and Material’s *Charles Dick* crew “would remain divided among communities throughout Canada.” Yet one wonders if the labourers who populated Kelley Island’s fleet of sand suckers might have come from the hundreds of workers that the company had attracted from southern and central Europe to work in its quarries on its island namesake.

<sup>106</sup> “Increase for Dredge Workers,” *Amherstburg Echo*, May 30, 1919, in *Echo Soundings: Marine News from the Amherstburg Echo, 1915–1919*, Vol. 15 (Amherstburg, ON: Marsh Historical Collection, 2015), 108.

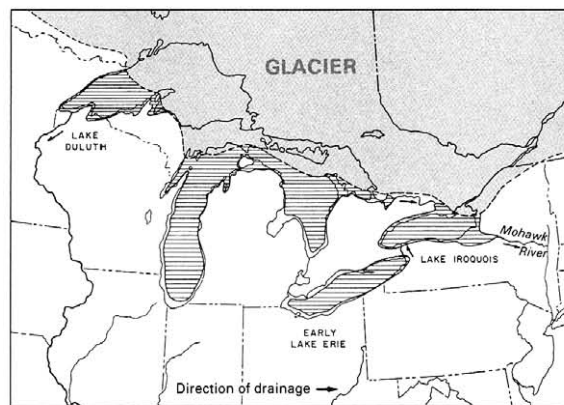
of their work. The lakes and their basin, which occupies an area of 150,000 square miles (240,000 square kilometres) and contains a fifth of the world's surface fresh water, shaped sand mining as much, if not more, than technical advances or labour issues. Its geological composition and geography would complicate the industry's activities, as would rapid shifts in perception and values of the shorelines and riverbanks adjacent to sand sucker operations, as seen at Pelee Island, Point Pelee, and the St. Clair River. [See Figure 2.]



*Highest Lake Maumee (Maumee I) stage in the Erie basin. Drainage was westward across Indiana into the Wabash River system. Modified from Hough (1958).*



*Lake Whittlesey stage in the Erie basin. Drainage was westward across central Michigan. Modified from Hough (1958).*



*Early Lake Erie stage, when lake level was lower than modern Lake Erie. Drainage was eastward into Lake Iroquois (a predecessor of Lake Ontario) and then into the Mohawk River in New York. Modified from Hough (1958).*

**Figure 5 Formation of the Great Lakes. Source: Michael C. Hansen, “The History of Lake Erie,” Ohio Geology Newsletter, Fall 1989, 3.**

## 2.2 The lake, the river, and the lands in between

Scoured out by glaciers beginning some twenty thousand years ago, the Great Lakes form the largest freshwater system in the world and are considered seas.<sup>107</sup> Indeed, four thousand years ago, whales occupied the lakes and “walruses sported on now-vanished shorelines along the northern part of Michigan’s lower peninsula,” William Ashworth notes.<sup>108</sup> The lakes were born from repeated events of glaciation that eroded and ground bedrock and altered their contours.<sup>109</sup> As glaciers advanced, they pushed clay, sand, and gravel to new locations and then deposited long, finger-like trails of this material, known in geological terms as moraines, as they melted. Isostatic uplift, the earth rebounding as the weight of the glaciers disappeared, helped to further define the lakes’ morphology and shorelines.

Because of its southernmost location, Lake Erie is the oldest of the Great Lakes. It began as a lowland watershed for the Eriean River some two million years ago that was deepened by repeated rounds of glaciation. Geologists presume the lake’s southernmost location prevented it from being as deeply gouged as the rest of the Great Lakes: ice that reached so far south was not thick enough to have as much impact.<sup>110</sup> As glaciers began to retreat about fourteen thousand years ago, the lake that emerged, Erie’s predecessor Glacial Lake Maumee, drained to the south. Drainage would subsequently shift to the north before finally, about 9,500 years ago, moving to the east over the Niagara Escarpment. The St. Clair River, part of the river-and-lake system that feeds Lake Erie, shifted about 2,500 years ago “from a bedrock sill to an area of soft, easily eroded glacial till.”<sup>111</sup> [See Figure 5.]

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<sup>107</sup> Sly, “A Report on Studies of the Effects of Dredging,” 1.

<sup>108</sup> Ashworth, *The Late Great Lakes*, 5.

<sup>109</sup> Ibid. The basin itself was formed from three different sets of mountain-building events and, in the Cambrian period, the development of a deep rift that nearly severed North America into two.

<sup>110</sup> Michael C. Hansen, “The History of Lake Erie,” *Ohio Geology Newsletter*, Fall 1989, 1.

<sup>111</sup> Ashworth, *The Late Great Lakes*, 26.

Ashworth proposes that the relative newness of the lakes creates unique hydrological and ecological features. They have few fish species, for example, and some were anadromous—inhabitants of the briny-low-salt estuaries of oceans and seas—that adapted to freshwater habitats. The microscopic life on which smaller fish rely are fewer in type too, resembling types found in rivers rather than lakes. Consequently, the biological food chain for Great Lakes life is “simple, short, and easily disrupted.”<sup>112</sup>

The lakes do have a form of weak tide called a seiche; these are activated by concurrent differences in barometric pressure throughout the lakes, creating an effect “like water sloshing in a bathtub.”<sup>113</sup> As ice sheets advanced and retracted, they eroded shales, softer forms of sedimentary rock, and left behind the more erosion-resistant Silurian and Devonian limestone and dolomites that make up much of the islands of the Lake Erie archipelago.<sup>114</sup> This archipelago stretches from Ohio to Ontario and divides Lake Erie’s shallow western basin from the deeper central and eastern basins. Twenty-two islands make up the archipelago, including, stateside, Kelleys Island, the three Bass Islands (North, Middle, and South), and several others of much smaller size, some not much larger than a giant sandbar. Pelee, 20 miles (32 kilometres) south of Leamington and nine (15 kilometres) offshore from Point Pelee, is often mentioned as Canada’s southernmost land, but that title goes to tiny Middle Island, which lies only 164 yards (150 metres) away from the Canada-U.S. border. [See Figure 6.]

Surrounding these islands, along the lake’s shorelines and deep in its depths, stretch long moraine ridges comprised of sand, gravel, and, in some areas, clay and silt.<sup>115</sup> One of these ridges stretches southward from Point Pelee; another, the Pelee Lorain, stretches north from Ohio waters outside Sandusky toward and around Pelee Island. There are

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<sup>112</sup> Ibid., 27.

<sup>113</sup> Ashworth, *The Late Great Lakes*, 27.

<sup>114</sup> Hansen, “The History of Lake Erie,” in *Ohio Geology Newsletter*, 1.

<sup>115</sup> T.L. Holcombe et al., “Lake-Floor Geomorphology of Lake Erie,” World Data Center A for Marine Geology and Geophysics Research Publication RP-3 (Silver Spring, MD: National Environmental Satellite, Data, and Information Service, National Geophysical Data Center, 2005). Figure 4 shows moraines on Lake Erie’s floor:

<https://www.ngdc.noaa.gov/mgg/greatlakes/erie/RP3/lakefloorgeomorphologyoflakeerie.pdf>.

others throughout the lake, such as one that meanders along the depths of the eastern edge of the lake's central basin between the Presque Isle peninsula near Erie, Pennsylvania, and Long Point, Ontario.



**Figure 6 Chart of Lake Erie, 1915. Detail of western basin and the Erie archipelago.**  
**Source: Historical Map and Chart Collection, Office of Coast Survey, National Oceanic and Atmospheric Administration, U.S. Department of Commerce.**

Near and along the lake's shorelines, sand and gravel accrue, deposited there by near-shore currents and waves. These beaches, spits, and bars protect clay-based banks and soils farther inland. They also protect river mouths by forming natural barriers. Ashworth describes the ecological diversity of the wetlands that formed in the estuaries between the barrier and the river mouth as “among the most productive ecosystems on the planet” largely because the mingling of river and lake waters creates a continuing shift in water chemistry that can support a wide variety of life.<sup>116</sup>

The characteristics of the aggregate deposits in the lake and the St. Clair River system differed widely, with many of these deposits lending themselves to specific uses either in construction or manufacturing. For instance, a 1960 study of the four primary deposits of

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<sup>116</sup> William Ashworth, *Great Lakes Journey: A New Look at America's Freshwater Coast* (Detroit, MI: Wayne State University Press, 2000), 41–42.

sand and gravel in Ohio's share of Erie's waters determined the brown sand found in Maumee Bay (brown because it contained iron oxide) was best used for concrete but could also be used as iron and steel molding sand, engine sand, grouting sand, and fill sand.<sup>117</sup> Sand found at Cedar Point, however, was fit to use for glass, abrasive, filter, flooring, and carborundum.<sup>118</sup> Sand acquired in the late 1800s from Anishinaabeg and Wendat territory on the Canadian side of the border at the mouth of the St. Clair River made its way into glass-making operations in nearby Wallaceburg and across the border in Michigan.<sup>119</sup> Sometimes specific characteristics were needed to satisfy specialized one-time uses. In the 1920s, three grades of Lake Erie sand were used in the asphalt mix to surface runways at Port Columbus to help achieve a "dense mix with a roughened surface texture."<sup>120</sup>

Given the variety of these deposits and their proximity to fast-growing cities such as Detroit, Cleveland, Sandusky, Toledo, and Windsor, it becomes easy to see why water-based aggregate mining held an edge over inland quarries. Dredging "plants" could easily travel to different deposits, unlike land-based pits, which were confined to one spot and possessed a limited range of aggregate types.<sup>121</sup> Nor did these vessels have to carry costs

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<sup>117</sup> Robert P. Hartley, *Sand Dredging Areas in Lake Erie. Technical Report Number 5* (Columbus, OH: State of Ohio Department of Natural Resources, Division of Shore Erosion, 1960), 26–27. According to Hartley, Maumee Bay, Cedar Point, Lorain Vermilion, and Fairport were the four main deposit locations in Ohio's waters.

<sup>118</sup> Hartley, *Sand Dredging Areas*, 39.

<sup>119</sup> Rick Fehr, "Who Has Traded Cash for Creation? Approaching an Anishinaabeg Informed Environmental History on Bkejwanong Territory" (PhD diss., Faculty of Environmental Studies, York University, 2010), 9, 312. Bkejwanong Territory consists of several islands at the mouth of the St. Clair River, including Walpole, Squirrel, and St. Anne. Members of Ojibwa, Odawa, and Potawatomi First Nations live there. See page 9 for a description of the territory; read page 312 for a description of the sand used to make glass.

<sup>120</sup> R.H. Simpson, "Airport at Port Columbus, Ohio," *Public Works* 60, no. 11 (November 1929): 440. In 1968, builders of the NASA Plum Brook Space Propulsion Facility near Sandusky used Lake Erie sand likely drawn from the Maumee deposits to create the inner walls of its vacuum test chamber. The builders noted that "although considerably higher in trace elements than that made from crushed stone," the sand "was easier to handle in the low-water and low-cement-content concrete used in areas where activation was less of a problem, such as borated concrete." In effect, builders used this type of concrete to minimize shrinkage. This example is beyond the time period of this study but still speaks to the idea of specialized use. See Ira T. Myers and James A. Kish, *Long-lived Radioactivity Produced in Northern Ohio Concrete Materials by Neutron Activation*, NASA Technical Memorandum X-1361 (Washington, DC: NASA, 1967), 2.

<sup>121</sup> AO Mines—Land Administration—Permits, Licences—Sand and Gravel, Crown Lands (1972) RG 1-8-0-2573, Box 144. For dredging, Ontario licensed the ships rather than the companies that owned them.

to clean material; lake and river waters did the washing. As the industry shifted from mechanical to hydraulic dredging, many sand suckers also began to use their centrifugal pumps to sort sand and gravel onboard using screens and even to discharge “undesired substances” overboard.<sup>122</sup>

When these boats arrived at docks, “the sand or gravel was immediately ready to use.” Mechanical dredges, by way of comparison, necessitated dockside sorting that required workers to push material “through rudimentary screens” and then handle it “by shovel and wheelbarrow.” Therefore, vessels equipped with hydraulics cost less to operate than an inland pit mine because labour, transportation, equipment, and maintenance costs were considerably lower.<sup>123</sup> Speed was another advantage: the *Charles Dick*, the purpose-built sand sucker launched in 1922 and owned for much of its working existence by the Canadian-owned National Sand and Material Company, took only five hours to reach Cleveland from the sand deposits it dredged south of Point Pelee.<sup>124</sup>

The American gravel industry characterized qualities such as these as unfair advantages in its unsuccessful effort to convince the U.S. federal government in 1929 to impose tariffs on Canadian waterbed gravel and sand. For instance, in a somewhat disingenuous submission that lumped waterbed mining with Canadian activity and pit-mining with American, the National Sand and Gravel Association noted that “[t]he Canadian producer of these products enjoys several natural advantages such as cheaper initial investment, cheaper power, cheaper labor, and cheaper water transportation . . . The American producer is handicapped by higher initial investment for gravel beds, higher labor and power costs, together with high freight rates.”<sup>125</sup> Although they were not the first to do

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Ontario’s licensing records show how one vessel visited several deposits in Lake Erie and other lakes. Over its long career, the *Charles Dick* dredged for gravel in Lakes Superior, Erie, and Ontario and in the St. Clair and Niagara rivers.

<sup>122</sup> Shumaker, “*Charles Dick*.”

<sup>123</sup> Shumaker, “*Charles Dick*.” Statement of William P. Kelly, Cleveland, Ohio, Representing Dolomite (Inc.), of Ohio; The Sturgeon Bay Co., of Wisconsin; and the Wagner Cos., of Ohio, “Sand and Gravel,” Tariff Act of 1929, Schedule 16, 634–38. Brief of the National Sand and Gravel Association (Inc.), Washington, DC, in Tariff Act of 1929, Schedule 16, 657–58.

<sup>124</sup> Shumaker, “*Charles Dick*.”

<sup>125</sup> Brief of the National Sand and Gravel Association, Tariff Act of 1929, Schedule 16, 657.

so, by the early 1900s, sand sucker operators had begun to use their hydraulic systems to self-unload cargo.<sup>126</sup> Boats that could offload cargo themselves were better positioned to make deliveries no matter the size of a harbour or how extensively its docks were outfitted.

The ability to load, transport, and offload made these plants nimble suppliers to construction and manufacturing. International Sand routinely delivered the gravel it collected at the headwaters of the St. Clair River to Arthur Hoyles in Dresden nine miles (14.5 kilometres) inland on the Sydenham River and more than 12 miles (19 kilometres) from Lake St. Clair, to the town of Wallaceburg, 3 miles (5 kilometres) from Lake St. Clair, and to the city of Chatham, nearly 10 miles (16 kilometres) inland along the Thames River from Lake St. Clair.<sup>127</sup> For three years, the company also hauled gravel across the river's international boundary just south of Sarnia to the Edison Company for the construction of the Marysville Power House that helped to power Detroit.

Despite the advantages water-based mining offered, especially in the compact western Erie basin, the practice was plagued with complications that arose from the area's geology and ecology, as well as from its numerous jurisdictions and diverse populations. The most obvious of these were all the jurisdictional boundaries and government requirements that a sand sucker operator had to know if planning to operate in another jurisdiction. Some were national, such as the U.S. Merchant Marine Act, also known as the Jones Act, which complicated the operations of Canadian vessels in American waters. Introduced in 1920, the federal legislation required all vessels transporting cargo from one point to another in the United States to be American-built and -registered vessels owned by Americans and crewed by Americans.<sup>128</sup> This legislation may have been at play when, after the Detroit Edison Company asked International for 910 cubic yards of

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<sup>126</sup> "Hennepin," *Michigan Shipwreck Research Association*, <https://www.michiganshipwrecks.org/shipwrecks-2/shipwreck-categories/shipwrecks-found/hennepin>. The first self-unloader on the Great Lakes was the *Hennepin*, a steam freighter launched in 1888. After a shipboard fire, it was redesigned in 1902 to carry self-unloading equipment.

<sup>127</sup> See IGLR Nicholson 8, Folders 11, 16, and 43.

<sup>128</sup> *Shipping Under the Jones Act: Legislative and Regulatory Background*, (Washington, DC: Congressional Research Service Report R45725, 2019), 1. See "The Dredging Fleet" on page 18 for discussion of the Dredging Act of 1906.

sand in March 1922, International had to decline, “as we would not be allowed to dig sand on the American side of the river where the good grade is obtainable.”<sup>129</sup>

How much one had to pay to obtain the gravel also varied between Michigan, Ohio, and Ontario, depending on royalty arrangements and whether the source was privately or publicly owned. Sometimes the conditions were advantageous. Until 1935, Ohio, for instance, did not charge a royalty or issue licences for sand or gravel dredged from lakes, making these resources free for the taking.<sup>130</sup> In Ontario, fees fluctuated depending on the deposit’s location and which government was involved. The Dominion government charged Cadwell 50 cents an acre and a royalty of two cents per cubic yard of material removed to dredge sand and gravel from 41.14 acres at the tip of Point Pelee.<sup>131</sup> At the headwaters of the St. Clair River, it charged Cadwell nothing, although it imposed a cap on how much the company could take each year.<sup>132</sup> The Ontario government, by way of contrast, charged twenty cents per cubic yard of material removed from the riverbed under its jurisdiction.<sup>133</sup>

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<sup>129</sup> March 11, 1922, Deane Letter to Detroit Edison Co., IGLR Nicholson 8, Folder 21.

<sup>130</sup> Herdendorf, “History of the Lake Erie Sand and Gravel Industry,” 188.

<sup>131</sup> In southern Ontario, the acre remains the common form of unit measurement for land parcels, so I have opted to use this form of measurement in this thesis. One acre equals roughly 0.4 hectares.

<sup>132</sup> Lease Lot A, Naval Reserve, Point Pelee, to C.W. Cadwell of Windsor—Min. Int. [Minister of the Interior], 1910/04/16, Order-in-Council 1910-0779, Privy Council Office, Library and Archives Canada RG2, Series A-1-a [Henceforth LAC Privy Council Office]. Dredging St. Clair River, Sarnia and Point Edward, Contract with the Cadwell Sand and Gravel Co. [Company] to Do This Free Providing the Co. [Company] May Dispose of the Dredged Material—M.P.W. [Minister of Public Works], 1910/04/22 Order-in-Council 1910-0786, LAC Privy Council Office. Rondeau Harbour and Pelee Point License to Spencer Stone of Chatham, Ontario, to Dredge at—Min. P.W. [Minister of Public Works] 1911/09/06 Order-in-Council 1911-2211, LAC Privy Council Office. Cadwell, in 1910, also signed or acquired a 21-year lease from the Dominion government to remove sand and gravel from the 41.14 acres at the tip of Point Pelee, described in the lease document as “situated at the extreme point of the said [Naval] reserve extending into Lake Erie.” The cost to acquire the sand? An annual fee of 50 cents per acre and a royalty of two cents per cubic yard of material removed. (See the lease listed above.) A year later, the Dominion Department of Public Works would grant the aptly named Spencer Stone of Chatham the privilege of dredging sand and gravel from areas off the shores of Point Pelee and Rondeau Harbour. The agreement makes no mention of royalties charged but stipulates that Stone could not export any of the material to the United States “until the Canadian Market for such material in the District, where the operations are carried on, shall be fully supplied.” The agreement also did not allow Stone to essentially “sublet” the lease to anyone else. See Rondeau Harbour and Pelee Point License to Spencer Stone of Chatham, Ontario, to dredge at - Min. P.W. [Minister of Public Works] 1911/09/06 Order in Council 1911-2211, LAC Privy Council Office.

<sup>133</sup> “Sand and Gravel License No 107, St. Clair River,” 1, IGLR Nicholson 8, Folder 40.

With vessels seemingly built to make the most of their aquatic environment and lax government oversight, many dredging companies ignored boundaries and government controls.<sup>134</sup> But in the early years, perfectly legal methods to secure good access existed, such as negotiating a long-term government lease as Cadwell and others did for dredging at Point Pelee and agreements with property owners or, better still, buying water lots outright. In Ontario, Cadwell and Fleming avoided paying royalties altogether by buying water lots adjacent to Fishing Point on the south end of Pelee Island in 1904. (The area had been leased to commercial dredgers by the lots' former owner since 1896.) In 1909, Cadwell (having acquired Fleming's share) sold the prized water lots to Homegardner and Hendricks for \$30,000 in cash, leaving the Sandusky-based businessmen free to mine their properties without having to pay anything other than municipal taxes.<sup>135</sup>

Getting around a growing public backlash against sand-sucking activities, however, presented a far more difficult task. A shift in public perception of the lands next to where commercial dredgers carried out their operations ignited the issue. Ever since their first experiences of Erie's western basin, European explorers and settlers had dismissed the sand and gravelled shores of Point Pelee, Pelee Island, and even the marshy islands that formed the delta at the mouth of the St. Clair River along with the marshes at Lake St. Clair as being of little value to their settlement efforts. Their contempt showed in their choice of names. The French word *Pelee* translates roughly to the English terms "bleak," "barren," and "waste."<sup>136</sup> In 1721, Pierre Francois Xavier Charlevoix, a Jesuit priest, declared Point Pelee's west side was "well enough wooded," but the east was nothing but "a sandy tract of land with nothing but red cedars that are quite small and not in abundant quality." John Lees, who travelled across the point in 1768, noted treacherous waters. "The doubling of this point is reckoned very dangerous on account of a long point of land

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<sup>134</sup> For further discussion, see Chapter 2 section 2, 48.

<sup>135</sup> June 19, 1918, Pelee Island Township Petition to the Lieutenant-Governor of the Province of Ontario, AO Attorney General Central Registry Files, RG 4-32 [Henceforth AO Attorney General Central Registry Files].

<sup>136</sup> "Out of the Storied Past: Little Journeys to Interesting Places: Pelee, Canada's Southernmost Island," *Hamilton Spectator*, September 11, 1948, 13, in Burwell-McCormick Papers Notebook 1, AO McCormick Family Fonds (1814–1950) MU 452 AO Fonds - F479 [Henceforth, AO McCormick Family Fonds]. Point Pelee was initially called Pointe aux peres.

that runs off. The treachery of the Pointe is not lessened by the fact that its shape and length are subject to change,” he wrote.<sup>137</sup>

Many of these early European venturers acknowledged that the point’s marshes sustained a rich diversity of wildlife that made for good hunting, only to follow up with observations of the area’s unsuitability for agriculture or settlement. “Pt Pele [sic] marsh is covered with water and in some places a quagmire and never can be improved,” noted Thomas Smith while surveying the area in 1805 and 1806. Of the three townships in the area, “not above the third part of them is habitable—extensive swamps and morases [sic] perilous places—thickets and water throughout stagnant and ruinous. ... [S]uch an abominable country ... I have never before traversed,” he wrote.<sup>138</sup>

By the late 1800s, just as the sand-sucking industry on the Great Lakes started to gain momentum, perceptions of these areas suddenly began to change. Driving this transformation was the availability of technology such as diking and hydraulic dredging (the same technology that had revolutionized waterbed aggregate mining). This equipment and method of shore protection made it possible to permanently drain these region’s marshes and fortify the new farmland against high-water flooding. On Pelee Island, where some farming had begun to take place by the mid-1800s, two Ohio men, Lemuel Brown, a dock builder, and Dr. John F. Scudder, the owner of Electric Medical College in Cincinnati, acquired Pelee’s Big Marsh in the centre and surrounding wet timberland for \$2 an acre.<sup>139</sup> Working with the township, the Ohio men used steam dredges to cut canals through the marsh, established ditches to channel the water into the canals, and built a pumping station to empty the marsh water into the lake. The township spent \$200,000 to reclaim an area of about 6,200 acres, roughly tripling the island’s farmable area. “Five pumping stations are required to keep these lands free from flooding,” wrote J.L. Morris, a civil engineer for the township, in 1918. He noted that the

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<sup>137</sup> Battin and Nelson, *Man’s Impact*, 44.

<sup>138</sup> Ibid., 51.

<sup>139</sup> Marion McCormick Hooper, *Pelee Island, Then and Now* (Scudder, ON: Hooper, 1967), Chapter 18. The book lacks page numbers.

township paid \$6,000 yearly to keep the pumps running.<sup>140</sup> Full of nutrients, the former marshes' muck soils, along with the island's lake-moderated climate, made it possible to grow high-value crops, such as onions and cabbages.

At Point Pelee, drainage of the marshes had also begun, similarly altering an understanding of the land as a repository of natural resources such as timber, sand, and game to that of a renewable resource of high-value agricultural production. Naturalists and ornithologists also had begun to visit the naval reserve at the tip of the point and, by the early 1900s, they had launched a campaign to persuade the federal government to introduce greater protections for the area's wildlife habitat that supported both permanent species and the semi-annual migrations of hundreds of thousands of birds. This push, initiated in 1915 by the Dominion's first ornithologist, resulted in the 1918 transformation of the naval reserve into a national park.<sup>141</sup>

With these land "improvements" came the growth of local worries about the effects of sand sucker operations. Residents feared that if left unchecked, these "plants" might significantly alter the size of the beaches, sandbars, and spits that helped to protect the newly created farmland and recreational areas in the region. And it was not as if sand sucking would affect only one or two properties. The drained marshes covered thousands of acres. On Pelee Island alone, the fortunes of 100 property owners relied on an elaborate system of dikes and pumps to keep the reclaimed marshes dry enough to farm. Throughout much of the island, the mix of sand and beaches and nearby bars were all that stood between these dikes and the lake. It was the same at Point Pelee and Rondeau Bay and along the shores of Lake St. Clair. Unsurprisingly, the conflict over how best to use these shores triggered the local and provincial efforts in the early part of the 1900s to bring their activities under control.

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<sup>140</sup> May 4, 1918, Report from J.L. Morris to the Reeve and Council, Municipality of Pelee Island, 2, AO Series RG 1-339 Sand and Gravel Extraction and Shoreline Damage Monitoring Files Box 3, Folder 5 [Henceforth AO Damage Monitoring Files].

<sup>141</sup> Henrietta T. O'Neill, *Birding at Point Pelee: A Birder's History of One of Canada's Most Famous Birding Spots* (Toronto: James Lorimer & Company, 2006), 47.

Yet it was not the first time opposing perceptions of the merit of these areas had created challenges for their diverse populations, and it is important to briefly examine the traditional Indigenous view of these areas as places of abundance. The interaction between this view and the initial European view of the area as a wasteland created faults in the common-law property rights system that the British colonial government imposed on the region. Ignored for decades, these faults persisted, complicating the conflict between sand suckers and those who occupied the lands adjacent to the waters. Their presence would also shape the approaches that the Ontario and Dominion governments took to manage the situation as the conflict evolved and affect the Walpole First Nation's efforts to manage sand-sucking operations in its unsundered territory at the mouth of the St. Clair River.

Europeans might have dismissed locations such as Point Pelee for being little more than a marshy gravel pit that appealed to wildlife, but the Indigenous communities who called the western Lake Erie basin home regarded them as places of treasured abundance. Marshes were valued destinations for hunting, shorelines for fishing, and the soils in areas bordering the marshes for agriculture. According to Eliot Fackler, the First Nations who made the area home, including the Anishinaabeg and Wendat communities that were present just before European contact, practised a semi-sedentary lifestyle that embraced a centuries-long tradition of landscape management to protect and nurture their food resources. Hunting and foraging could involve travelling over vast distances within the territory.<sup>142</sup> Near the Black Marsh on Lake Erie's southern shoreline in present-day Ohio, communities burned forest edges to create prairie to attract deer, introduced temporary weirs to capture spawning walleye, and scattered seeds to promote growth, perhaps even of wild rice. In small areas that they cleared, they grew corn, beans, and squash. "[T]hey travelled across a managed landscape that we might liken to a geographically dispersed

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<sup>142</sup> Fackler, "Domesticating the Country," 33–58. The region has long been inhabited. Fackler provides an extensive treatment of this history.

polyculture farm."<sup>143</sup> Archaeological evidence suggests similar practices in place along the northern shores of the lake.<sup>144</sup>

Ironically, the shift in perception that came with the arrival of the Europeans may have led these ambitious newcomers to be less vigilant about obtaining a claim over these landforms. While representatives from the Odawa, Ojibwa, Potawatomi, and Wyandot First Nations had agreed to sell a good portion of the Ontario peninsula to the British in 1790, no agreement was struck with the Caldwell First Nation, whose members continued to occupy both Point Pelee and Pelee Island into the late 1800s.<sup>145</sup>

On Pelee Island, the oversight was discovered in 1854 by the island's owners, the McCormick family. Family members spent more than a decade trying to convince authorities to issue them patents for their property, and the newly minted Ontario government did in 1867. The federal government, however, made the patent conditional on obtaining a surrender from "any of the Indian tribes [who could] be in existence of those who originally owned the island."<sup>146</sup> By 1904, this condition remained unfulfilled, even though the McCormick family continued to live on the island and had sold property there to others. It is not known when members of the Caldwell Nation left the island for good. Thaddeus Smith, author of a late nineteenth century history of the island, noted that there had been a permanent settlement on the island until the late 1700s, when several community members opted to relocate to the mainland and numbers on the island declined. A subsequent description suggests that Indigenous communities continued to use the island's voluminous marshes for seasonal hunting.<sup>147</sup> However, it would be reasonable to assume that these visits would have ended once the island's largest marshes were drained, which would have eliminated much of the nation's traditional hunting

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<sup>143</sup> Ibid., 45.

<sup>144</sup> Laurie Leclair, *The Caldwells of Point Pelee and Pelee Island: A Brief History and Survey of Documents* (Ottawa: Treaties and Historical Research Centre, Indian and Northern Affairs Canada, 1988), 1–4.

<sup>145</sup> Ibid., 6–8.

<sup>146</sup> Ibid., 12.

<sup>147</sup> Thaddeus Smith, *Point au Pelee Island: A Historical Sketch of and an Account of the McCormick Family, Who Were the First White Owners on the Island* (Amherstburg, ON: Echo Printing Company, 1899), 3, 21.

grounds. At Point Pelee, some accounts suggest members of the nation remained until white settlement forced them to move in 1840, while others suggest they remained until the 1860s. Still others noted that members of the nation lived there well into the twentieth century.<sup>148</sup> The nation, in turn, dispersed among reserves along the St. Clair and Thames rivers. Members would continue to pursue their claim over the next several decades; they staged protests at the park and on the island in 1922 amid the growing local frustrations about sand sucker activity.

Provincial records do not suggest that the Caldwell claim directly affected the sand sucker dispute. Yet it is reasonable to assume the nation's actions would have heightened existing anxiety in local settler communities about the potential for property loss because of waterbed mining. Knowing that First Nations had valid claims to the areas most popular with sand sucker operators, Dominion and provincial authorities likely recognized that they would have to tread carefully as they tried to resolve the mining issue. All along the way, a flawed and sloppy title provenance that had never been clear from the start would complicate their efforts.

Therefore, once marginal land was suddenly transformed into highly valued farmland, a nature preserve, and a recreational area, sand sucker operators came into direct conflict with large numbers of landowners, naturalists, and government officials. Just as this fledgling industry reached its stride in 1918 in Canada, a perfect storm of public reaction erupted. The reaction would come from farmers and residents as a conservationist mindset began to take hold in southwestern Ontario and from all levels of government—especially in Ontario, where the legislature had recently passed from the hands of the Conservatives into the United Farmers of Ontario.<sup>149</sup>

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<sup>148</sup> Leclair, *Caldwells of Point Pelee and Pelee Island*, 19, 21 and Parks Canada, *Point Pelee National Park of Canada Management Plan* (2010), 11.

<sup>149</sup> I use "conservationist" in this context in its broadest sense as the effort to preserve and protect natural resources whose abundance appears to be under threat and whose ongoing supply is seen as necessary to support local activities, including economic community building.

**Figure 7 Details from navigation maps of Islands in Lake Erie including Sandusky Bay, Ohio : 1912 (7a); 1917 (7b); and 1929 (7c). The distance measure between Middle Island and the tip of Fish [Fishing] Point remains unchanged at just under 2 miles (3 kilometres) between 1912 and 1917 but increases nearly 1 mile (1.5 kilometres) more between 1917 and 1929. The unchanged measure between 1912 and 1917 may suggest the same measures were used in these years without employing a survey to verify them, raising the question of whether the measure used in 1912 was similarly not verified. Source: Historical Map and Chart Collection, Office of Coast Survey, National Oceanic and Atmospheric Administration, U.S. Department of Commerce.**

Figure 7a

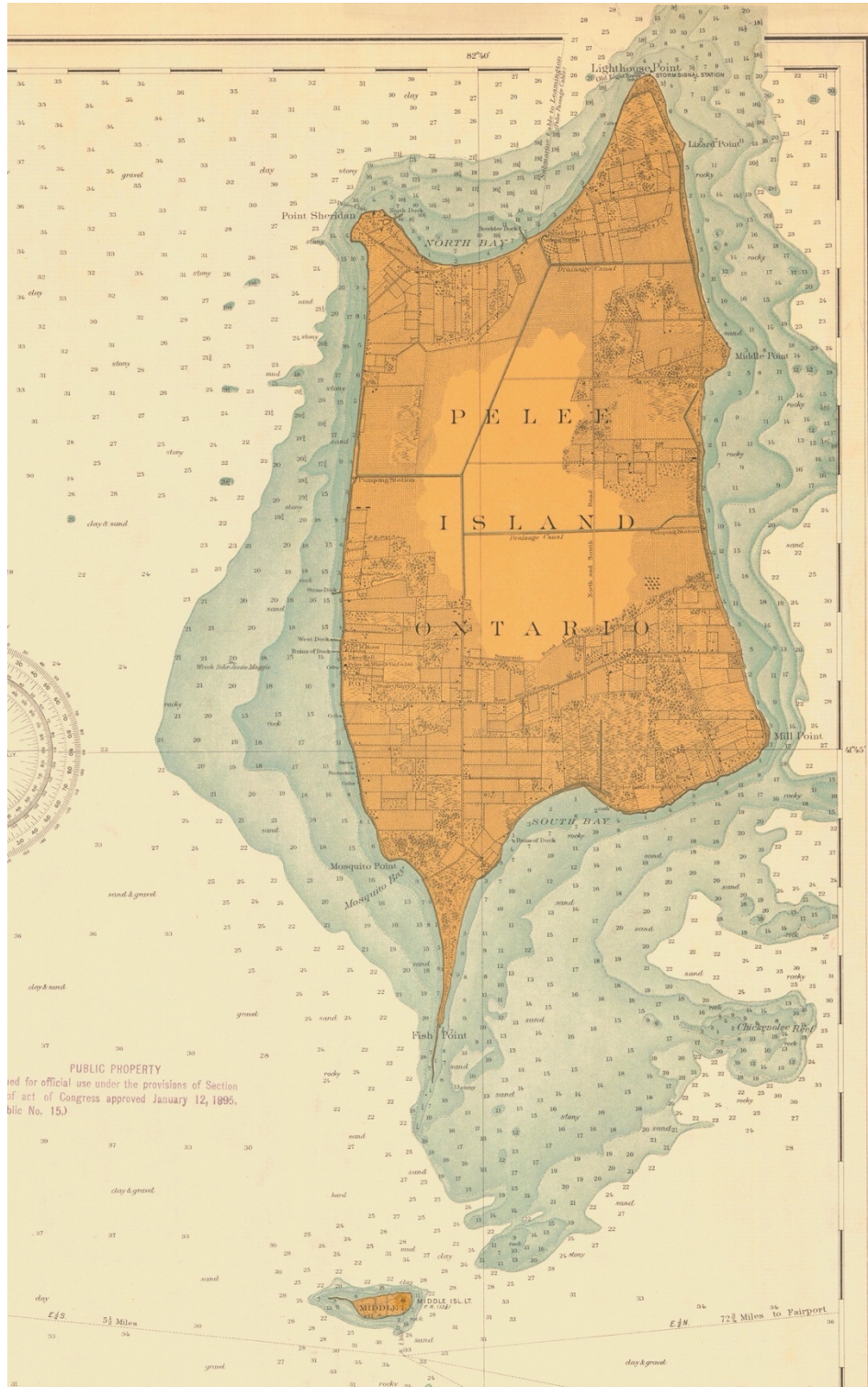
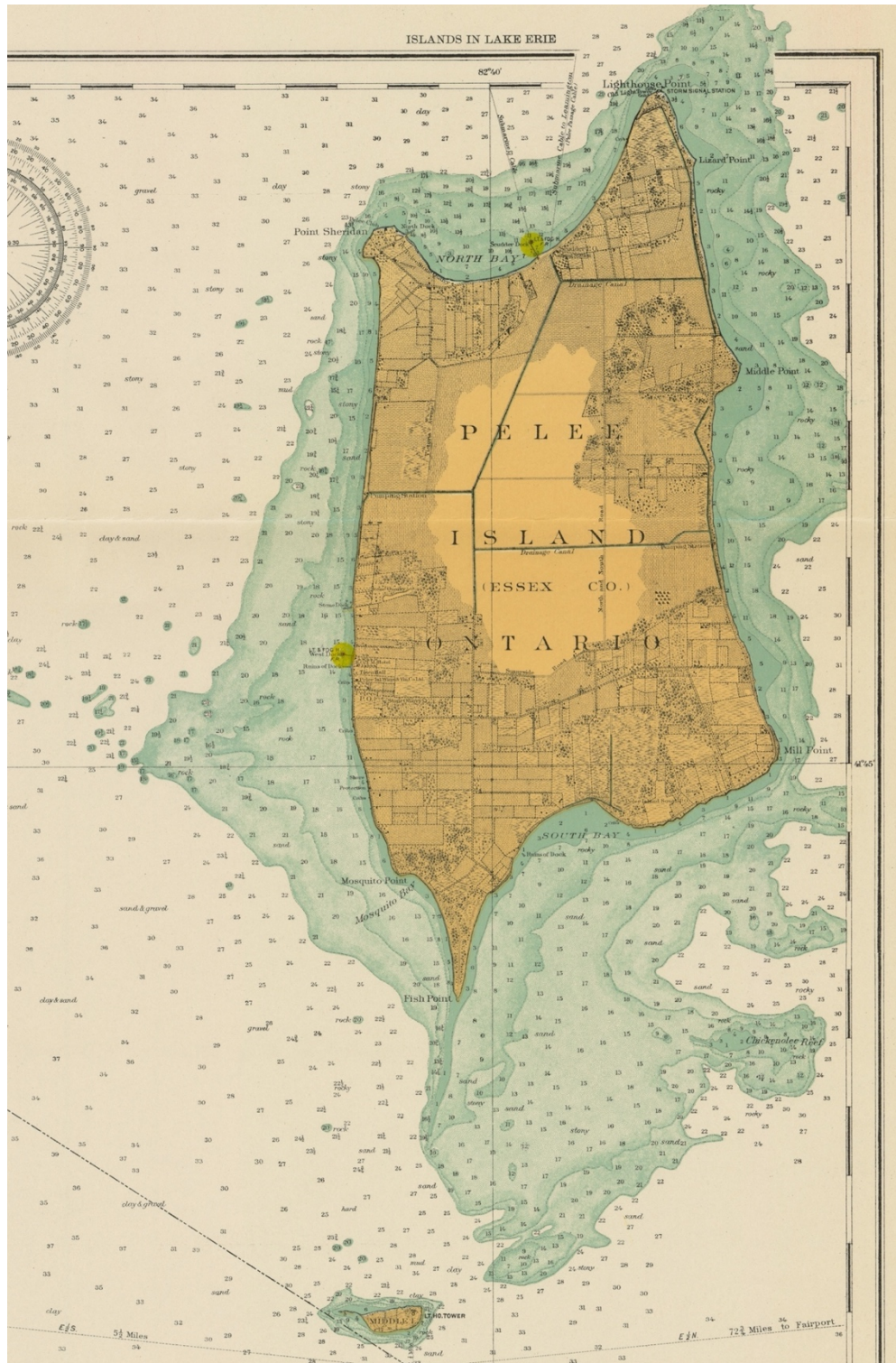


Figure 7b



Figure 7c



## Chapter 3: Destroying shores by “the sand-sucking method”

Shifting perceptions of the value of the land along the Canadian shores of Lake Erie's western basin sparked the events that unfolded there in the first decades of the twentieth century, largely because the shift brought two opposing activities, dredging and farming, into conflict with each other. The intensity and duration of the conflict that arose, as described in the latter section of this chapter and the first section of Chapter 3, suggests other, harder-to-identify ideological conflicts were also at play, such as competing beliefs about the impact of human activity on shoreline processes like erosion and who was best positioned to make the final judgment call. These beliefs informed actions and subsequent reactions as the sand sucker panic in southwestern Ontario took hold. To better understand why the events unfolded the way they did, this chapter turns first to an examination of how understandings and interpretations of shoreline processes were beginning to change and some of the factors informing these changes.

### 3.1 Erosion

Each year, the clay bluffs near and in Wheatley Provincial Park on the northwestern Lake Erie shoreline lose nearly a third of a mile (half a metre) to erosion.<sup>150</sup> The bluffs and what few sandy beaches that remain below them are certainly more vulnerable to erosion than, say, the hard basalt found along Lake Superior's northern shore. Yet this section of Lake Erie, a 10-minute drive from Point Pelee, is hardly the only shoreline to experience erosion; it occurs everywhere throughout the world's shorelines to greater and lesser degrees and is a fundamental characteristic of these dynamic liminal environments. Think of it as a “mechanical” phenomenon, writes Ashworth, where, like a cross between a shovel and a conveyer belt, water scoops up bits and pieces of land and transports it elsewhere.<sup>151</sup>

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<sup>150</sup> “Wheatley Provincial Park Management Plan,” Ontario Ministry of the Environment, Conservation and Parks, last modified July 12, 2021, <https://www.ontario.ca/page/wheatley-provincial-park-management-plan>.

<sup>151</sup> Ashworth, *The Late Great Lakes*, 188.

Waves loosen, remove, and transport this material, and several factors contribute to a wave's ability to pulverize. Wind and the stretch of water over which it travels unimpeded (known as "fetch" to mariners) determine a wave's size; the larger the wave, the greater the energy it carries. A wave transfers its energy to a surface, so an upward-sloping waterbed with a gentle incline will likely reduce a wave to little more than a froth of bubbles and drops when it reaches shore. However, a wave originating deep in the lake that encounters a cliff planted in water brings much of its force to the collision, erupting in a powerful burst of spray.

A clay bluff's encounter with deep-water waves might leave it kneed and tottering, causing material above to slump toward the waterline, mainly because the materials comprising these landforms "erode faster than shores made of coarser stuff, simply because small things are easier for the water to carry away." Waves containing sediments and sand become abrasive and erode rock faster than waves lacking the material. That is why erosion can be more pronounced down current of a beach.<sup>152</sup>

Eventually, material snatched by waves settles as movement subsides, a process called deposition that completes the larger cycle of give and take to which erosion also belongs. Where material settles depends on the current providing the transportation. An offshore current, created as gravity pulls the remains of the wave back into the lake, drags material into the depths; the "clockwise swirl" of a longshore current, largely generated from wind and from waves that encounter shores on an angle, hurries the material along the shoreline where, once settled, it forms beaches, spits, and sandbars.<sup>153</sup>

Anishinaabe creation mythology succinctly captures the cycle's ability to produce both loss and gain as well as its generative, land-from-water building effect. When Muskrat retrieves "a few grains of sand and a bit of mud" from beneath flooded waters to help build the earth and nearly dies in the process, "Wenebojo breathed on the Muskrat and

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<sup>152</sup> Ashworth, *The Late Great Lakes*, 189.

<sup>153</sup> *Ibid.*, 190.

restored his life; then he took the mud and rolled it in his hands. Soon he had enough for a small island, and he called the other animals to climb out of the water.”<sup>154</sup>

At the turn of the nineteenth century, in locations where shorelines were undeveloped in Erie’s western basin, settler communities similarly understood shoreline erosion to be part of a natural cycle of erosion and deposition.<sup>155</sup> It might even be argued that they considered the cycle beneficial and protective to settlement: the decision to locate in places such as Pelee Island, for instance, would not have occurred if there had been pressing concerns about the landform’s stability.

Because of this belief that balance was an innate quality of the larger cycle, the roughly 800 people who lived on Pelee Island by the turn of the century would have viewed the shoreline fluctuations as temporary, brought about by storms or changes in water levels. Many residents were farmers, farm workers, fishermen, and mariners. Their occupations demanded vigilance over their environment; they would have seen how, offshore, sandy shoals protected the shoreline from the corrosive effects of waves that raced in from deep in the lake. The return of these shores to roughly the same contours over time would have reinforced assumptions that when the wind blew just right, waves that stole sand and gravel from one point, such as the long twisting stretch of Fishing Point, deposited these materials on another, such as Mosquito Bay on the island’s west side.

This perspective suggests that at the community level many of these inhabitants connected a vision of their own well-being with their personal experience of the landscape. In *The Health of the Country*, Conevery Valencius asserts that American settlers in the Ohio Valley and beyond during the nineteenth century used their understanding of the human body and its functions to make sense of the new and unfamiliar landscapes they encountered. “Good or bad, harmful or improving, terrain

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<sup>154</sup> Isaac Day-Murdoch, *Indigenous Knowledge and Our Connection to the Land*, Vol. 1, Teachers’ Resource (M’Chigeeng, ON: Kenjgewin Teg, 2021), 61.

<sup>155</sup> February 14, 1920, Judgement of Lennox, J., *The Attorney General Ex Bel. The Corporation of the Township of Pelee and Others v. Homegardner*, 3, AO Despatches. February 26, 1921, Memo Re: Pelee Island from Thomas Gibson to Ontario Minister of Mines, 2, AO Despatches. May 4, 1918, Report from Morris to Pelee Island Council, 8, AO Damage Monitoring Files.

possessed health in the same language and for the same reasons that human beings did,” Valencius argues. “Basic properties applied to self and to surroundings, from the struggle of a volcano to expel foul matter to the strain of a boil to release putrid fluids and the bodily essences call humors.” Further, cultivating wilderness, settling it, and bringing it into agricultural production, “was to work healing on it.”<sup>156</sup> Development of the land made it resilient and full of vigour, which could be seen in the fruits of its production.

This connection between the idea of human and land health can be seen in Smith’s historical account of the island’s development which drew parallels between the island’s increasing fertility after “improvements” were made and the prospering of its settler community. When describing the arrival of William McCormick and his family in 1834 (McCormick had bought the island in 1823), Smith depicted the island as being in “a primeval state” and nearly uninhabitable. Other than a handful of clearings made by tenants, great swathes of marsh occupied the island as well as some wildlife that included a few elk and deer but mostly foxes, raccoons, muskrats, and ducks. During the spring and fall, there were geese, rattlesnakes and “myriads of mosquitos, deer flies, horse-flies and other biting flies” that in summer months tormented “both man and beast.”<sup>157</sup> Draining the marshes transformed the island, Smith wrote, by doubling the amount of land that could be farmed and “making room for a larger population.”<sup>158</sup> More people

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<sup>156</sup> Conevery Bolton Valencius, *The Health of the Country: How American Settlers Understood Themselves and The Land* (New York: Basic Books, 2002), 3–4, 192.

<sup>157</sup> Smith, *Pointe au Pelee Island*, 21–22, 25–26. In a paragraph that explains why the family initially failed to transform the island into a more thriving and comfortable environment, Smith explains that on their arrival they logged and raised livestock. Then came the political unrest of the 1837 rebellion in Upper and Lower Canada, the sudden death of William McCormick, a family dispute over property division, and an ownership dispute. “It was twenty-seven years after the death of William McCormick before his will was complied with and before his heirs received a good title to the land they had occupied so long. These twenty-seven years had made but little change on the face of the island.”

<sup>158</sup> Smith, *Pointe au Pelee Island*, 22, 28. Smith’s writing about the McCormick family’s initial farming practices and their early “improvements” to the island further exemplifies how Smith believed settlement brought the land to health and fostered more settlement. Early on, horses that lived out of doors became “quite wild,” and the hogs that fed on hickory nuts, acorns, and roots were hunted like wild beasts. But, when summarizing this same time before launching into an account of the extensive development of the island during the 1860s, Smith characterized the livestock very differently. As the “new era” of Pelee Island was about to dawn, he described the potential of the livestock. Cattle and horses “thrive and live well upon the natural grasses and undergrowth with very little attention.” Hogs were “fattened” on nuts. “The soil was rich, and when properly cultivated produced good crops of wheat, corn and potatoes and other vegetables.” Timothy and clover grew “luxuriantly.”

meant more trade and business, which motivated improvements in the island's connection with mainland communities. Draining "greatly improved the sanitary conditions, drying up the malarial area." The embankments devised to protect the former marshland from lake waters "furnish excellent roadbeds and have become a part of the public road system of the municipality."<sup>159</sup>

By the turn of the century, a very different perspective on the relationship between humanity and its environment began to take hold of North American society, especially within the fast-developing scientific fields of natural sciences and public health. Associating practices such as clearcutting forests with drought and temperature change, some scientists began to perceive human activity and, in particular, its industrial practices as anathema to natural processes.<sup>160</sup> Human practices, they argued, disrupted nature's balance.<sup>161</sup> Some identified inland erosion as one of the symptoms of such a disruption, linking its growing presence to intensified logging and agricultural practices that exploited imperial hinterlands in a large enough volume to satisfy the needs of rapidly industrializing urban centres.<sup>162</sup> Such arguments reinforced conceptual divisions between the course of human development and natural processes and promoted the corollary belief that nature offered a life-sustaining balance as long as it remained untouched by human civilization and its damaging industrial practices.<sup>163</sup>

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<sup>159</sup> Smith, *Pointe au Pelee Island*, 35.

<sup>160</sup> "Lost Forests," *The Globe*, June 21, 1890, p10; "Forestry and Rainfall," *Canadian Statesman*, November 14, 1888, p2; and "The Health Officers," *The Globe*, August 21, 1890, p2.

<sup>161</sup> Hannah Holleman, *Dust Bowls of Empire: Imperialism, Environmental Politics, and the Injustice of "Green" Capitalism* (New Haven, CT: Yale University Press, 2018). See Chapter 2. Many raised similar concerns about deforestation and its effects on climate change. David Anderson, "Depression, Dust Bowl, Demography, and Drought: The Colonial State and Soil Conservation in East Africa During the 1930s," *African Affairs* 83, no. 332 (July 1984): 321–43. Quoted in Holleman. Anderson describes a perception of erosion at the time as the "first global environmental problem."

<sup>162</sup> Holleman, *Dust Bowls of Empire*, Chapter 2.

<sup>163</sup> Many historians have discussed the hypocrisy of European colonial and settler societies' belief of nature as something untouched by human hands. These writers have established that this belief relied on the systematic erasure of the presence of the people who had occupied the territories that were then labelled as wilderness. See, for example: Cronon, "Trouble with Wilderness," in *Uncommon Ground*. Holleman, *Dust Bowls of Empire*. Dorceta E. Taylor, "The Rise of the Environmental Justice Paradigm: Injustice Framing and the Social Construction of Environmental Discourses," *American Behavioral Scientist* 43, no. 4 (January 2000), 508–80.

Newspapers often carried articles about how industrial practices were destroying the natural world.<sup>164</sup> Even residents of rural communities isolated from urban bustle would have been aware of the growing trend in linking erosion's destructive effects to interfering human hands.<sup>165</sup> Caught between two visions of humanity's relationship to the environment as the new century progressed, Pelee Islanders combined aspects of both as they struggled to comprehend the emerging threat to their livelihood that had appeared along the island's shoreline.

By the 1910s, currents were no longer replenishing the shoreline with sand and gravel. Islanders began to panic at the rapid changes in the island's mass; by 1913, a sixth of the island (2,000 acres) had disappeared.<sup>166</sup> Residents blamed sand suckers, the vessels that had industrialized the waters of the Great Lakes to obtain its aggregate and feared for their own well-being. The "erosion of the shores" was "emperilling [sic] the extensive dredging systems," they stated in a 2014 petition to the province, pleading it to stop the dredging. If action was not taken, "incalculable injury would be done to the Island and the drainage system thereon."<sup>167</sup> They especially feared for the island's soils that the beaches had protected, especially for the nutrient-rich muck soils they had painstakingly reclaimed by draining the most extensive marshes.

The sand suckers operated in the waters around Fishing Point and were either owned by the Sandusky-based Lake Erie Sand Company or by other American and Canadian

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<sup>164</sup> See Footnote 160.

<sup>165</sup> Equally clear, however, is that scientists, politicians, and farmers alike viewed efforts to drain wetland marshes in Erie's western basin as a beneficial land "improvement" rather than as interference. That an activity which employed the same technology could be judged as either beneficial or destructive depending on how its purposes were valued (agricultural production or aggregate extraction) suggests an intriguing correspondence with the positive and negative values people at this time applied to the erosion/deposition cycle depending on its effects; this correspondence in turn suggests that while settler communities considered themselves as separate from nature, they believed humanity and nature were governed by the same rules.

<sup>166</sup> "Hauling Away Pelee Island: Uncle Sam's Sand Suckers Busy: Fifty Acres a Year Vanish: Provincial Government Inactive in Spite of Petitions for Relief," *London Advertiser*, republished in *Amherstburg Echo*, April 30, 1914, in *Echo Soundings: Marine News of 1913–1914: Excerpts from the Amherstburg Echo*, Vol. 10 (Amherstburg, ON: Marsh Historical Collection, 2007), 80–82. The proportion is based on the island's size of 12,000 acres in survey a century earlier.

<sup>167</sup> Morris Report to Pelee Island Council 3, AO Damage Monitoring Files.

companies that leased pumping-ground rights from Lake Erie Sand's owners, who, by 1909, had acquired the point and the adjacent water lots. In less than eight months during the 1913 navigation season, these boats had made roughly 1,330 trips to Fishing Point and its surrounds, estimated John Lidwell, a former light keeper on Middle Island. With loads averaging eight hundred tons (726 metric tonnes), these trips meant more than a million tons (more than 900,000 tonnes) of sand had disappeared in less than eight months. Islanders feared that if sand sucker activity continued at such a pace—at any pace in the area, for that matter—they would no longer have an island left to farm.<sup>168</sup>

Nine miles (15 kilometres) north of the island on Point Pelee, erosion had become a concern, too. There, Dominion officials were the first to raise alarms about the impact of sand sucking on the point's tip and the surrounding sandbars. "The end has shortened over 1/2 mile in two years ... dredging should be abandoned," wrote a worried C.E. Kingsmill, vice admiral and director of naval services in 1914. Like the islanders, Kingsmill feared continued dredging would alter currents. "It does not seem right that the integrity of the shoreline should be interfered with for the convenience and profit of the private individuals," he wrote.<sup>169</sup> His observations merged the older idea of land development being a method of improving social health with the newer idea of human industrial practices being potentially harmful to the environment.

Residents at both locations believed the waterbed aggregate mining had introduced a far-reaching systemic change that affected most of the shores in their area. Currents altered course and intensified. As protective shoals disappeared, waves rolled in with greater force and, on their retreat, would have scoured deep below-water troughs near the shoreline that only enhanced their force. In the waters surrounding the shrinking Fishing Point at Pelee Island, residents imagined an ever-deepening pit that, like a toilet flushing, produced a swirling vortex that dragged sand and gravel away from the island's eastern and western shorelines and interfered with circulatory flows that might bring replenishments. "That sand is flowing into the sand sucking zone from somewhere is

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<sup>168</sup> "Hauling Away Pelee Island," *London Advertiser*, in *Echo Soundings*, 81.

<sup>169</sup> Battin and Nelson, *Man's Impact*, 90.

evidenced by the fact that the zone is a prescribed one and there is a limitation upon the depth from which they may draw sand and gravel,” reasoned the *London Advertiser* in May 1914. “Yet year after year they return to the same place, resume operations and find the supply inexhaustible.”<sup>170</sup> As a consequence, the basin, “with the aid of natural forces supplied by wind and by the waters of the lake have extracted and drawn the sand and gravel banks and deposits, which formerly lay along and out from the west, south and east shores of the island and which afforded that natural protection to the shores of the island and particularly to ...[the residents’] lands and works ... away from the said shores and have shifted them to and gathered and accumulated them into the said basin...”<sup>171</sup> When they presented a petition to their local municipal council to ask higher governments to cancel the leases, the council had not only endorsed the petition, but noted “[w]e regard the injury as incalculable.”<sup>172</sup>

However, and despite this alarming turn of events, authorities hesitated when the panicked residents reached out to governments for help. With accusations being levelled against American vessels, Ontario and Canadian government officials wanted expert opinions before deciding on the next course of action. The experts they turned to were a new form of specialist: scientists and engineers employed by the government.

The government technical expert who rose to prominence during the Progressive Era offered public employers a way to assert and justify regulations and practices that might constrain the activities of powerful businesses. “[R]eformers and regulatory officials sought to provide these new institutions with greater legitimacy by stressing the expertise of commissioners and administrators and their ability to act as disinterested guardians of the public interest,” explains Terence Kehoe. “This ideology of expertise was especially appealing to self-conscious professionals in the emerging fields of public health and conservation.”<sup>173</sup> Styling themselves as impartial experts helped these new government

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<sup>170</sup> “Hauling Away Pelee Island,” *London Advertiser*, in *Echo Soundings*, 81.

<sup>171</sup> February 14, 1920, Judgement of Lennox, 2, AO Despatches.

<sup>172</sup> “Hauling Away Pelee Island,” *London Advertiser*, in *Echo Soundings*, 82.

<sup>173</sup> Kehoe, *Cleaning Up the Great Lakes*, 6.

bureaucrats gain credibility with businesses and the public and, ultimately, secured the status of their profession.

Developing an expert opinion involved not only collecting data, but also conveying an analysis of this information with a sense of authority and objectivity. Achieving this sense of impartial authority relied on a studied mixture of specificity and generalization. Specificity nurtured trust while generalization protected the secrets of how these new professional classes operated. For example, Amy Slaton notes that in the cement industry, expectations of “precision” and “control” were not priorities for the civil engineers who tested concrete. Indeed, the tests, measurements, and enforcement standards they used “were often predicated on loosely defined criteria.” Instead, an engineer achieved authority through his skill, insight, and the personal character he exercised while deciding which criteria to use and apply—it was “the tester, not the test” that mattered. These qualities, she argues, were inherently subjective and embodied distinct class-, race-, and ethnicity-based criteria. The ideal engineer was white, male, North American-born with as extensive a knowledge of the humanities as of the technical standards of his profession, who embraced the dominant morals of his time so that he was a “polished gentleman.”<sup>174</sup>

The Ontario and Dominion governments’ in-house experts who studied the erosion issues at the Pelee locations during the 1910s and 1920s used approaches that reflect Slaton’s characteristics of the newly emerging professional. These experts included engineers such as James Hutcheon with the Department of Mines in the Ontario Ministry of Lands, Forests and Mines, J.L. Morris, a civil engineer hired by Pelee Island Township, Alex Baird, a local civil engineer who occasionally worked for local municipalities and had worked as a surveyor for the Dominion government, and Edward Martin Kindle, a U.S.-trained paleontologist and sedimentologist who worked for the Geological Survey of Canada.<sup>175</sup> In most cases, these professionals combined hard data and technical skill with

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<sup>174</sup> Slaton, *Reinforced Concrete*, 8, 49–51, 93.

<sup>175</sup> Wilfrid Gerard Stone, “A Geographical Survey of Pelee Island,” (MS thesis, University of Western Ontario, 1949), 20. Kindle examined both Point Pelee and Pelee Island at various points throughout the 1920s. Stone discusses his work at Pelee Island.

intuition and personal observations to form their analysis. All were white Anglo-Saxon men; Hutcheon and Morris were both graduates of the School of Practical Science, the forerunner of the University of Toronto's Faculty of Applied Science and Engineering that was directed by Principal John Galbraith. There, they not only learned about topics such as practical chemistry, algebra, and mineralogy, but also how to draw and to speak another language. As leaders of the emerging profession sought to establish their importance to advancing the modern age, these two engineers would have also learned to place greater value on their own, trained opinion than on that of an "untrained" observer.<sup>176</sup>

Positioning themselves as the objective authorities, both Hutcheon and Kindle set out about their tasks by flatly rejecting residents' theories that the sand sucker activity produced systemic change on little more than gut instinct. "I am of the opinion that the removal of gravel and sand from the lake bottom at a distance of 5000 feet or more in the area South of the Point will not sufficiently affect erosion on the point to warrant any local attempt to prevent dredging," Kindle wrote the Geological Survey's directing geologist in 1918.<sup>177</sup>

Hutcheon, who had visited both Pelees frequently over six years beginning in 1913, was willing to acknowledge a localized effect. During a 1914 visit following the submission of the islanders' petition, he found some erosion but nothing of imminent threat to the pumping stations that kept the island's valuable farmlands drained, so he recommended

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<sup>176</sup> "Petition of the Undergraduates of the Ontario School of Practical Science Presented to the Lieut.-Governor-in-Council," (Toronto, March 6, 1901), 15–16, 19, [urn:oclc:record:1042133839](https://www.oca.on.ca/urn:oclc:record:1042133839). In 1901, a student petition to expand the premises of the Ontario School of Practical Science expresses the idea of becoming a "supreme" authority by acquiring "appropriate" training as an integral bias of the profession. The petition included a letter—dated October 27, 1900—from Dr. Henry S. Pritchett, president of the Massachusetts Institute of Technology, to the *Philadelphia Post*. In the letter, Pritchett noted: "As to preparation, this is the day of the trained man. In competition with him the untrained man, or the poorly trained man, cannot maintain himself." Pritchett added: "In all this progress the engineer, the trained engineer, is to play a role such as he has never yet had the opportunity to assume since commerce began. Our own West was conquered in the strength of an untrained virile energy. The far East, old in her wisdom, is to be conquered, and can only be won by the aid of the most versatile, the most efficient, the most perfect training. He who is to subdue it will go forth, not as did the argonaut of '49, with pick and shovel, but with text-book and steam-engine and dynamo. This man is the engineer. The twentieth century is his."

<sup>177</sup> E.M. Kindle, *Report to Mr. Wm. Innes, Directing Geologist, Canadian Geological Survey* (Ottawa: Department of Mines, Geological Survey, 1918), 11. Quoted in Battin and Nelson, *Man's Impact*, 117.

no provincial action. Four years later, in 1918, he acknowledged and even expressed alarm at its progress, noting “very great changes within the last three or four years” at Fishing Point. “The timber area is being cut away, and very little sand bar is to be seen in the lake south of the timber line,” he wrote. He linked the point’s erosion to sand sucker activity: “The work of the sand boats at Fishing Point is no doubt responsible for the shortening up of the point,” he wrote in an April 16, 1918, memo to the minister of Lands and Forests.<sup>178</sup> But he ruled out a systemic effect and doubted the dredging had “any appreciable effect on the erosion now going on along the shore of the island to the north of Mosquito Bay.” Instead, he attributed the erosion farther north along the island’s western shoreline to a chronic, ongoing, and unrelated problem, “as is evidenced by the old cribs which at that time were constructed to protect that shore” years before the volume of sand sucker operations had increased.<sup>179</sup> The trouble was that Hutcheon, on seeing the “old cribs,” appeared to completely dismiss exploring whether any other factors might have also contributed to erosion in that area.

This dismissal reflects how Hutcheon’s inconsistent approach to investigation blinkered consideration of the potential of the sand sucker operations producing larger-scale interruptions in the erosion and deposition cycle as the residents had claimed. So too did his use of landmarks.

Hutcheon frequently used landmarks as a short cut to spot significant erosion, such as trees falling into water and, in 1918 on Pelee Island, the loss of a shoreline road that he had travelled on in 1914.<sup>180</sup> He used these as well to compile measurements to chart shoreline changes. At Point Pelee, he used the house of Captain Wilkinson, built in 1915 at a point equidistant from the point’s east and west shorelines to measure. From 1917 to 1920, he found that the east side measurement shrank from 24 to 9 yards (22 to 8 metres), while the west side distance grew from 47 to 73 yards (43 to 67 metres).

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<sup>178</sup> April 16, 1918, Memo for the Minister from James Hutcheon, 2–3, AO Damage Monitoring Files.

<sup>179</sup> Ibid., 3.

<sup>180</sup> Ibid., 2.

At first, Hutcheon took extensive measurements at Pelee Island too.<sup>181</sup> But gradually, his investigations there became hurried and almost exclusively focused on the most obvious areas of erosion. In 1918, as the provincial engineer breezed through Mosquito Bay on the southwest side of Pelee Island where he found “no erosion noticeably,” he did not pause to wonder why.<sup>182</sup> By selecting only the most pronounced areas of activity to inform his judgments rather than considering all the interactions along the shoreline, Hutcheon revealed that he had narrowed his set of assumptions well before he began his investigations.

Nor did Hutcheon appear to investigate the size or breadth of the sand extractions at Fishing Point or observe the water currents at the point over time or even assign someone locally to this task, even though an assessment of currents would have been critical to evaluating the residents’ claims. A lack of available science would not have held him back in the pursuit of an assessment of the currents around the island. Sailors and scientists had long used some simple approaches to determine currents, such as the use of floating bottles to calculate speed of movement between two fixed points.<sup>183</sup> By this time as well, mechanical flow meters were available.<sup>184</sup> Moreover, efforts had taken place in both the Great Lakes and in the Maritimes to study currents in large bodies of water, so there was some knowledge base available.<sup>185</sup>

It is conceivable, however that there may have been other practical constraints, such as not having the time to conduct such a study or the budget to hire someone else to do it. The Ontario Bureau of Mines reported a jump of nearly 11 per cent in mineral mining production values in 1917 compared to the year before and a further jump of 8 per cent in

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<sup>181</sup> May 4, 1918, Report from Morris to Pelee Island Council, 6, AO Damage Monitoring Files. See references to Hutcheon’s measurements.

<sup>182</sup> April 16, 1918, Memo from Hutcheon, 2, AO Damage Monitoring Files.

<sup>183</sup> "Age of Exploration," National Ocean Service website, [https://oceanservice.noaa.gov/education/tutorial\\_currents/06measure1.html](https://oceanservice.noaa.gov/education/tutorial_currents/06measure1.html), accessed August 3, 2023.

<sup>184</sup> "Current Meter Register," The National Museum of American History website, [https://americanhistory.si.edu/collections/search/object/nmah\\_1434252](https://americanhistory.si.edu/collections/search/object/nmah_1434252), accessed August 3, 2023.

<sup>185</sup> "Tides and Currents," *The Montreal Gazette*, January 23, 1896, 6 and "Navigation," *The Globe*, May 23, 1892, 7.

1918 compared to 1917.<sup>186</sup> With many of the bureau's staff joining the military effort overseas, it is likely the bureau struggled with too small a staff and possibly too limited a budget to oversee such rapid industry growth.

To fill in some of these gaps in measurement, Hutcheon paid attention to his personal sensations and casual observations, as he would have been taught to do through his training as an engineer. Indeed, he ascribed enough significance to these that he added a few to his 1918 memo to the minister of Lands, Forests and Mines. Though it would have made no difference to how water was eroding the shoreline, he described the wind that blew during his 1918 visit to Point Pelee as “cold.” Although he was there to examine existing damage, he further described the wind as “strong” and “blowing from the north east, and as the wind had been blowing for some time the water in the west end of the lake was considerably higher than normal.”<sup>187</sup> In this way, he used a temporary, passing weather condition that he had experienced to represent an ongoing situation, even though he did not provide any evidence to show how frequently or intensely the wind blew from that direction and increased lake levels.

The report's many assumptions also lack supporting evidence. Hutcheon asserted that a northeast wind at either of the Pelee locations prompted “strong currents flowing southward along the east shores, and at the same time southward currents of less velocity along the west shores of the point.” The currents sweep the sand, which is washed up by the waves, southward to form the sandbars at their southern extremities.” Yet he did not bother to test currents to see if his assumption was right. The way the sandbars and other sand “deposits” had formed alongshore were evidence enough, he suggested, “that the only lake currents [that] have any appreciable effect in the movement of sand are those flowing from north to south.”<sup>188</sup>

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<sup>186</sup> Ontario Department of Mines, "Twenty-Seventh Annual Report of the Ontario Bureau of Mines, 1918, Part 1 (Toronto: A. T Wilgress, 1918), 5, and Ontario Department of Mines, "Twenty-Eighth Annual Report of the Ontario Bureau of Mines, 1919, Part 1 (Toronto: A. T Wilgress, 1919), 4. Note that these values were influenced by growth in both production volume and product demand.

<sup>187</sup> April 16, 1918, Memo from Hutcheon, 2, AO Damage Monitoring Files, 1.

<sup>188</sup> Ibid., 3.

Hutcheon could have distanced himself from observations by untrained observers to safeguard his status as an impartial expert to his superiors. An absence of a more extensive timeline of shoreline changes at the island based on local observations might reflect his distrust of the validity of anecdotal accounts. Hutcheon did mention discussions with the island's present occupants in his 1918 report and did learn from the island's "first owners" that a gravel beach that protected the island's western shore had disappeared.<sup>189</sup> Otherwise, no official account exists of consultations with members of the Caldwell First Nation, who would have had extensive historical knowledge of the condition of both the island and the point. With their long association with the territory surrounding Erie's western basin, members of Anishinaabeg communities at Walpole Island, Aamjiwnaang, Kettle and Stony Point, and Chippewa at the Thames reserves would have possessed this knowledge too. Racism likely played a role in a decision not to pursue such accounts, but Hutcheon also lumped all area residents' attitudes toward sand suckers under one umbrella without providing detailed accounts of how these residents said their shoreline had changed. The absence of both Indigenous and non-Indigenous anecdotal accounts in his report suggests that Hutcheon did not much value what anyone local had to say about the shoreline changes.

All these oversights did not hamper the provincial engineer's ability to reach conclusions about how waves transported sand and gravel around the island. The discussion in his 1918 memo supported his vision of limited local effects from sand sucker activity and more extensive impacts from strong winds and high waters.<sup>190</sup> Nor was he the only engineer who leapt to conclusions on slender evidence: J.L. Morris, who accompanied Hutcheon on the 1918 inspection of the area, strongly supported the residents' theory of systemic change and even fleshed out the theory to explain the change.<sup>191</sup> Differing levels of professional competence might explain the polar opposite conclusions that the two

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<sup>189</sup> May 4, 1918, Report from Morris to Pelee Island Council, 1, 3, AO Damage Monitoring Files.

<sup>190</sup> April 16, 1918, Memo from Hutcheon, 4, AO Damage Monitoring Files.

<sup>191</sup> May 4, 1918, Report from Morris to Pelee Island Council, 8, AO Damage Monitoring Files. In his 1918 report to Pelee Island Township, Morris explains why the island is experiencing severe erosion. He bases his theory on measurements shared by Hutcheon, limited conversations with islanders, a passage from a civil engineering textbook, and one personal observation of wave activity.

engineers who had travelled to the island together came up with; so could sensitivity to the interests of their different employers. But the very existence of two such opposing views on the same subject by individuals trained in the same profession shows the degree to which subjective criteria contributed to the government experts' supposedly impartial assessment.

Both engineers agreed on the locations where erosion was taking place, and both referred to measurements and observations that Hutcheon had taken during previous visits. Morris noted that even though the wind was blowing from the northeast the day they had visited, "there was a sea coming into the west side of the Island from the south west, which was carrying away much of the clay banks and discolouring the Lake out so far as could be seen." He blamed the loss of the sandspit on sand sucking, noting that with the spit's disappearance, the "heavy seas from the east" were "rushing past the Point." He described the spit as a "breakwater" that "broke the sea from the East or West holding the deposit from the Island in both directions." During his visit, he noticed "the great scouring at the end of the point, which would not be taking place provided the original sand bar had not been removed." The "rush of water," he theorized, "would no doubt cause a much swifter current along the east and south banks of the Island, carrying with it more of the eroded material caused by the wash of the waves." Quoting William Rankine's 1861 *Manual of Civil Engineering*, he wrote that he had no doubt

that the removal of the sand bar at Fishing Point has facilitated the flow of material along the shores of Pelee Island during north east and north west winds and the excavation of such a large yardage of material at the point has not only facilitated the flow of water but has also increased the movement of sand and gravel along the shores owing to such increase in flow, but also, because of the large excavation which this material has to fill up. When the south west and south east winds blow there is no material to be carried bak [sic] by the waves to Pelee Island...<sup>192</sup>

In his 1918 report to the minister of mines, Hutcheon, however, did not address how the point had previously interacted with wave action or consider how its loss might have

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<sup>192</sup> May 4, 1918 Report from Morris to Pelee Island Council, 6-8, AO Damage Monitoring Files.

altered that action. Instead, he focused solely on wind direction and noted that the northeast wind that was blowing on the day of the visit produced “strong currents flowing southward along the east shores, and at the same time southward currents of less velocity along the west shores of the points.” He added that if the wind had instead come from the northwest, he would have expected the same, although the wind would have reversed the effect on the island’s east and west shorelines. He concluded, as discussed above, that most of the island’s erosion was produced by these forces and their impact on lake levels rather than the activity taking place on Fishing Point.<sup>193</sup>

The two engineers’ solutions to the problem similarly diverged. Mindful of the public purse, Hutcheon suggested a modest approach to mitigation: “[I]t would not appear to be necessary in the beginning to undertake any extensive or costly works of protection,” he wrote. Instead, why not use the island as a place to experiment on different types of shoreline protections to ascertain “the most economical and effective way of dealing with the matter.”<sup>194</sup> Municipal councils should chip in, he added. Morris, contracted by Pelee Island Township, concluded that “[t]he magnitude of the works necessary to prevent the disintegration of the shores of the Island makes it more than a Municipal question as it is beyond the capability of the people of Pelee Island. It is a matter for the Governments of the Dominion of Canada and the Province of Ontario.” He estimated that saving the west shore alone would cost \$100,000.<sup>195</sup>

As Pelee Islanders gathered evidence to make their case, first to the provincial and Dominion governments and later to the courts, Alex Baird, the township’s engineer, would be the only professional to document the changes at Fishing Point. According to his measurements, the basin that the sand suckers had created ranged from six to fifteen feet “and even 18 feet in depth, where formerly there existed natural banks and deposits of sand and gravel varying in elevation from two to three feet above the water level to two or three feet below the water level.”<sup>196</sup> Yet, despite all of these investigations by

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<sup>193</sup> April 16, 1918, Memo from Hutcheon, 2–3, AO Damage Monitoring Files.

<sup>194</sup> April 16, 1918, Memo from Hutcheon, 4–5, AO Damage Monitoring Files.

<sup>195</sup> May 4, 1918 Report from Morris to Pelee Island Council, 9, AO Damage Monitoring Files.

<sup>196</sup> February 14, 1920, Judgement of Lennox, 2, AO Despatches.

government “experts,” islanders still lacked the results of an investigation that directly addressed their claim that systemic disruption in the circulation of water around the island had taken place. Morris’s observation that removing the Fishing Point sandbar “would no doubt cause a much swifter current along the east and south banks of the Island” was only conjecture because Hutcheon had admitted that he had not studied lake currents at either Pelee Island or Point Pelee.<sup>197</sup>

### 3.2 Community exploitation and regulatory destabilization

Erosion triggered by sand suckers might have been new to the residents of Pelee Island, but by 1914 many shoreline communities and residents in the Great Lakes basin had experienced these boats’ alarming effects on their shoreline and riverbank properties.<sup>198</sup> Landowners initially viewed the situation as a property issue: by removing sand and gravel from privately owned shorelines or riverbanks or the waterbed offshore, sand suckers were reducing the size, and therefore the value, of their properties. Removing these materials without obtaining permission from the owners, who also held their property’s mineral rights, was a trespass and theft.

Many of these owners viewed the incursion as a new variation of previous experiences with opportunistic contractors who dug into privately held lakeshores and riverbanks to acquire sand and gravel for free wherever they could. Riparian rights encapsulated in Great Lakes U.S. states legislation gave property owners some control over their shorelines, in most cases to the high-water mark.<sup>199</sup> In these instances, owners could recoup their losses by taking contractors to court for stealing, trespassing, and causing

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<sup>197</sup> April 16, 1918 Memo from Hutcheon, 3, AO Damage Monitoring Files.

<sup>198</sup> Lafferty “Odd Boats, Part Four.” See, for example, a discussion of these issues.

<sup>199</sup> Joseph M. Saponaro and Keith H. Raker, “Public Trust Doctrine and Submerged Lake Erie Lands in Ohio,” *Cleveland Metropolitan Bar Journal* (October 2014): 15–16. Maia E. Jerin, “Paradise Lost? A Call to Clarify the Public Purpose Requirement in Ohio’s Public Trust Doctrine,” *Cleveland State Law Review* 61, no. 4 (2013): 1075–1103. Bertram C. Frey and Andrew Mutz, “The Public Trust in Surface Waterways and Submerged Lands of the Great Lakes States,” *University of Michigan Journal of Law Reform* 40, no. 4 (2007): 907–13. Kenneth K. Kilbert, “The Public Trust Doctrine and the Great Lakes Shores,” *Cleveland State Law Review* 58, no. 1, (2010): 1–58. While hotly contested, the boundary between the shoreline owner’s riparian rights and navigable waters in the United States only gained clarity with the 1953 passage of the federal Submerged Land Act. Even then, the question of what constituted a shoreline (a definition needed to establish where navigable waters began) remained unresolved.

damage, or they could strike fee agreements for the materials. Similar rights and enforcement of these existed in Ontario as well.

As contractors took to the water, however, plans of action for individual property owners became trickier. The activities still produced damage but no longer occurred on privately owned land. To pursue a legal claim based on property rights, landowners now had to demonstrate a direct relationship between the hole the sand sucker dug in the waterbed several yards away from the property line and their shoreline erosion problems.

Some residents who banded together found success in the courts. A 1911 Ohio Court of Common Pleas ruling affirmed that Buckeye Sand Company, owned by William Hendrickson, was damaging the Cedar Point Resort Co. property near Sandusky, Ohio, and the resort had the right “to protect its property against the removal of anything under the water that could in any way work to its injury.”<sup>200</sup> The judge ordered the sand company to move its operations. That same year property owners along the Canadian shores of Lake St. Clair conducted successful suits against both sand sucker operators and farmers who were removing “large quantities of sand from the shores of Lake St. Clair to such an extent as to do great damage in that neighbourhood and to become a great nuisance.”<sup>201</sup>

Yet in 1914, when the Ontario Conservative government passed the Beach Protection Act, intended to provide shoreline property owners with more legal protection, the law ended up making prosecution difficult because it allowed sand suckers to operate near shores if their owners had obtained written permission from a neighbouring shoreline owner. A company that had obtained the permission of one property owner could be operating within its legal rights, even if other property owners nearby complained about property loss.<sup>202</sup>

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<sup>200</sup> “Cedar Point company wins in a suit to protect beach,” *The Sandusky Register*, May 2, 1911, p1.

<sup>201</sup> March 20, 1911, Letter from Ellis & Ellis Barristers & Solicitors to Sir James Whitney, 1, in AO Correspondence of Sir James Whitney, F5-1-0-6511, MU 3131 [Henceforth AO Whitney Correspondence].

<sup>202</sup> March 20, 1911, Letter from Ellis & Ellis, 2, AO Whitney Correspondence. Thomas W. Gibson, *The Mining Laws of Ontario and the Department of Mines* (Toronto: Legislative Assembly of Ontario, 1933), 60. Concerns about who would permit sand sucker activity motivated Windsor-based legal firm Ellis & Ellis to contact Sir James Whitney, the provincial premier. A year after the Beach Protection Act was

Property owners, first in the United States and later in Canada, appealed to their governments to step in when their riparian rights no longer provided effective action to recoup their losses. Chicago & Northwestern Rail Road Company officials took this route after they became concerned about how offshore sand-sucking operations might affect the company's expansion plans on the Milwaukee shores of Lake Michigan. In 1879, they convinced the State of Wisconsin to sue Schultz & Bond for "stealing" state property.<sup>203</sup> Great Lake state governments had provisions worked into their original charters that acknowledged ownership of the beds of the border waters. Nevertheless, to bring these operations under control, states had to bridge the legal chasm between ownership and the ability to enact that ownership. Sand-sucking operators who pushed back against regulation also forced these states to determine exactly why waterbed mining activity might violate the public right to access publicly held resources in such a way that they required regulation.<sup>204</sup> Establishing control, therefore, inevitably involved either pursuing court actions to demonstrate state rights or introducing new legislation to exert governance, and often both.

In 1913, the Indiana attorney general had claimed control of its share of the Lake Michigan waterbed when the office initiated legal action against the Chicago-based Lake Sand Company to block it from operating in state waters. "Lake Sand Company fought the initial Indiana suit, arguing the state had no claim on the lake bottom, but the suit meandered through the courts, ultimately reaching the Indiana Supreme Court," writes Lafferty.<sup>205</sup> The company would eventually lose, as would another company that sued Indiana a decade later.

Many sand sucker operators initially ignored state regulations as they emerged, as Michigan State officials found after introducing a leasing system in 1915 "for the taking

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passed, in 1915, the province reduced the term of dredging leases to a year, possibly as another attempt to introduce more control over sand-sucking activity and in recognition of the industry's potential to generate income for provincial government coffers.

<sup>203</sup> Lafferty, "Odd Boats, Part Four."

<sup>204</sup> Kilbert, "The Public Trust Doctrine," in *Cleveland State Law Review*, 2–3.

<sup>205</sup> Lafferty, "Odd Boats, Part Four."

of sand, gravel, and marl, under certain specific conditions and at prices fixed by the Commission.”<sup>206</sup> A year later, state officials learned that sand sucker operators ducked their lease and royalty payments as they continued to operate. An investigation found “some very extensive operations” at work, not only in Lake St. Clair but also in Lake Michigan: “The material taken in the operations along the west shore consisted for the most part of what is known as Torpedo Gravel of a very high grade extensively used in building operations in Chicago,” a summary of the investigation noted.<sup>207</sup> Boats operated by “the Chicago concerns” transported 600 to 900 cubic yards at a time “and have been operated continuously except after the close of navigation and as bad weather conditions prevented.” The state’s Public Domain Commission charged four Detroit “concerns” for violating trespassing laws because of their activities in Lake St. Clair. The high-grade sand they removed was “used extensively in Detroit building operations.”<sup>208</sup>

Regulation became even more complicated in Canadian waters because both Ontario and the Dominion held jurisdiction on the Great Lakes, issued permission for waterbed mining, and collected royalties. The British North America Act of 1867 assigned governance of Canada’s navigable waters to the Dominion. The regulatory power gave the federal government complete jurisdiction over a water body, but only in areas used for navigation, such as harbours and nautical transportation routes. This responsibility included improving rivers and lakes, such as clearing waterbeds from obstructions that might affect shipping. It also gave the Dominion ownership of many (although not all) public harbours, which included harbours on the Great Lakes and canals.<sup>209</sup> The Dominion also held the right to collect royalties on minerals extracted from the waterbeds, but only on those it owned.

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<sup>206</sup> State of Michigan, “Report of the Supervisor of Field Division,” in *Biennial Report of the Public Domain Commission from July 1, 1914 to June 30, 1916* (Lansing, MI: Wynkoop Hallenbeck Crawford, 1917), 147. January 10, 1923, Letter from John Baird, Director of the Michigan Department of Conservation to ISGC. Baird claimed that the company owed the state \$59.00 in royalties for “operations of your boat Ontario in state waters during the months of November and December.” IGLR Nicholson 8, Folder 25.

<sup>207</sup> State of Michigan, “Report of the Supervisor,” 145.

<sup>208</sup> Ibid.

<sup>209</sup> Articles 91 and 92, VI.—Distribution of Legislative Powers, British North America Act, 1867, <https://www.justice.gc.ca/eng/rp-pr/csj-sjc/constitution/lawreg-loireg/pl1t13.html>.

The same legislation, however, put public lands within provincial boundaries into the hands of the provinces as well as all “lands, mines, minerals and royalties.”<sup>210</sup> As was the custom in English common law, and as was practised across the border, the province treated waterbeds as if they were dry land property. While the approach was helpful for fixing geographic boundaries of ownership on fixed points, arranging sales and leases, or otherwise conferring rights of possession to municipal governments, this type of legislation could not address any issue that might arise from interactions between water and waterbeds, such as the destruction of fish spawning grounds by sand sucker pumping.<sup>211</sup>

The First Nations territory that straddled the sand-rich delta islands at the mouth of the St. Clair on the Canadian side made an already complicated system of governance infinitely more complex. From the early days of the water-based aggregate industry on the Great Lakes, sand sucker operators had illegally dredged the waters and beaches of the territory that had not been surrendered by First Nations populations who occupied reserves at Walpole Island, Aamjiwnaang at Sarnia, and Kettle and Stony Point along the southern shores of Lake Huron. The territory boasted large volumes of high-quality sand on the shores of islands such as Walpole, Squirrel, and Basset, the product of material transported by the river’s fast-flowing currents over thousands of years.

These jurisdictional divisions, gaps, and overlaps obfuscated who had control over several key aggregate deposits in Erie’s western basin watershed. For the canny sand sucker operators and the construction interests they served, the haphazard regulatory divisions created opportunities to sidestep government measures or play different levels of government against one another to secure sources of supply.

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<sup>210</sup> Article 109, VIII.— Revenues; Debts; Assets; Taxation, British North America Act, 1867.

<sup>211</sup> The watershed Boundary Waters Treaty of 1909 between Canada and the United States did provide a framework for the two countries and their many lower-level governments to share responsibility for boundary waters; the agreement, which established the International Joint Commission, also laid out methods to deal with tricky issues, such as water diversion, that could affect other jurisdictions. However, the treaty’s terms focused on water use: it provided no oversight strategies for waterbed activities unless they affected navigation, such as changing water levels or producing hazards to shipping lanes or harbours.

Most affected by these manipulations was the Anishinaabeg community at Walpole First Nation. Community members did not oppose some waterbed mining taking place, but they wanted to exert their rightful control over access to this material in their unsundered territory. The community intimated as much to Indian Affairs officials when, in 1882, its members rejected a sand dredging application that had been channelled through the Dominion department. A year later, the community opted to negotiate directly with sand sucker operators and set rates. It enlisted the help of the caretaker of a nearby hunting club to collect fees.<sup>212</sup>

Nevertheless, the community balked at allowing the removal of the large volumes of sand that local businessmen from Wallaceburg wanted to build and supply a glass factory and, a few years later, build a sugar beet processing plant. Businessmen lobbied Indian Affairs to intervene and gained the support of the community's Indian agent, Alexander McKelvey. McKelvey became intent on dismantling the First Nation's control over sand mining. Writing department officials, he suggested it "might want to consider an alternate measure" to push a deal through.<sup>213</sup>

The department told McKelvey the process could not be circumvented. Through the exchange, however, department officials discovered that the caretaker the First Nations community had employed to coordinate sand sales lived on American soil. Concerned that the community might be selling sand to Detroit-based operations, Superintendent Hayter Reed intervened. He warned McKelvey in an 1890 letter that the department would stop all sales to Americans "unless we are firmly assured that there is much more sand than the Wallaceburg manufactory may require." Reed then began to work with the Wallaceburg businessmen to develop a lease to take sand from the territory "in such quantities as they may require." Yet, at the same time, department officials continued to recognize the community's right to decide whether to surrender the sand, accepting its 1895 vote that vetoed the proposal. Nevertheless, sometime between that time and his death in 1901, McKelvey introduced Dominion control over the territory's sand resources

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<sup>212</sup> Fehr, "Who Has Traded Cash for Creation?" 314.

<sup>213</sup> Ibid., 317.

by illegally adding his vote to a resolution he had drafted for the community to surrender the material. Sand suckers began taking the sand, and the Dominion government now controlled sand-taking in the territory. “This is a fundamental experience of dividing and conquering as practiced through the acquisition of land and resources,” notes historian Rick Fehr.<sup>214</sup>

At the headwaters of the St. Clair River, where keeping navigation lanes open depended on an annual clearing of the gravel shoals, the Cadwell Sand and Gravel Co. avoided paying the province royalties by striking a five-year lease with the Dominion government in 1910. Under the lease terms, the government traded access to the aggregate for Cadwell’s dredging services. Reducing expenditure motivated the Dominion government to strike the deal: the Department of Public Works annually spent more than \$100,000 to remove the gravel with its ships. This way, the government would only need to cover the costs of hiring engineers to limit the amount of gravel to be removed each year to ensure an appropriate depth for shipping. The memo confirming the lease did not mention royalties the company might have to pay the government on the materials removed; it only stipulated that the company give first dibs on its spoils to Canadian buyers “in the district where the operations are being carried on.”<sup>215</sup> While the memo did mention government engineers would monitor the dredging, it remained silent on how officials planned to monitor how Cadwell met its obligations to Canadian buyers.

The cosy arrangement, however, only lasted for the life of the lease because, in 1915, a Supreme Court of Canada ruling clarified that provinces owned boundary waterbeds and were entitled to the proceeds related to waterbed aggregate mining. The judgment concerned the Dominion government’s action against British Columbia to claim ownership of Spanish Bank, “one of the natural confines of the harbour of English Bay, on the sea coast of British Columbia.” The Canadian government initiated proceedings to prevent waterbed aggregate mining taking place on the bank, but the court determined that English Bay was not federally owned. The court chastised the Dominion for

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<sup>214</sup> Ibid., 317–18, 324, 328.

<sup>215</sup> April 22, 1910, Memo from the Minister of Public Works, “Dredging St. Clair River, Sarnia and Point Edward,” Contract with the Cadwell Sand and Gravel Co., LAC Privy Council Office.

attempting to seize jurisdiction of these areas: “The terms ‘public harbours’ in item 2 of the third schedule of the ‘British North America Act, 1867,’ is not intended to describe or include portions of the sea coast of Canada having merely a natural conformation which may render them susceptible of use as harbours for shipping.”<sup>216</sup> The decision not only put boundary waterbeds into the possession of the provinces but also explicitly allocated the right to regulate waterbed aggregate extraction to the lower governments.

The Ontario government wasted no time in putting the federal ruling to the test in its jurisdiction by launching a suit in 1916 against Cadwell Sand and Gravel Co. Ltd. The province claimed the company owed \$56,888 (nearly \$1.2 million in today’s dollars) in royalties for the gravel it had obtained.<sup>217</sup> The federal minister of justice sought and obtained standing in the case. “The sand having been removed from the bed of the river which the Dominion claims to be within its right, it is, I think, only fit and seemly that it should be a party to the action, to defend that which has been done through its contractor,” wrote J. Middleton, the adjudicator of the province’s action against the Windsor contractor.<sup>218</sup> However, the case mysteriously paused, providing Cadwell Sand and Gravel with the luxury of not having to repay the provincial royalties until the dispute was finally resolved a decade later. Discussions between the two levels of government must have taken place behind the scenes because, within three years of the lawsuit’s initiation, the province had begun to work with the Dominion government to administer the dredging at the St. Clair headwaters. The province had also begun to collect royalties on the aggregate removed there.

Cadwell Sand and Gravel also seized control of most dredging operations at Point Pelee. In 1911, it obtained a 21-year lease to dredge the tip, which was part of the federal naval reserve. The Dominion ended the lease in 1915 to locate a life-saving station on the

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<sup>216</sup> November 2, 1915, Supreme Court Judgment *Attorney-General for Canada v. Ritchie Contracting and Supply Co.*, 79, 81.

<sup>217</sup> July 28, 1926, Letter from Miller, Ferguson & Hunter, Barristers, Solicitors, etc. to Attorney General of Ontario in AO Series 4-32 Attorney General Central Registry Criminal and Civil Files [Henceforth AO Attorney General Criminal and Civil Files].

<sup>218</sup> James F. Smith, E.B. Brown, Robert Michael Willes, *The Ontario Law Reports: Cases Determined in the Supreme Court of Ontario (Appellate and High Court Decisions)* (Toronto: Canada Law Book Company, 1916), 586. See *Attorney-General for Ontario v. Cadwell Sand and Gravel Co. Limited*.

property.<sup>219</sup> However, in 1910, the company had also been granted a sandbar that extended south from the point. The area covered 84 acres. It is not clear whether title was granted by the provincial or federal government.<sup>220</sup> What is apparent is that the acquisition once again ensured that the company avoided paying provincial royalties. It also gave the company the ability to lease dredging rights to other sand sucker operators.<sup>221</sup> (Clearly, Cadwell and his business partner, Oscar Fleming, had learned from their acquisition of Fishing Point on Pelee Island in 1904 that full ownership of aggregate-rich shores and water lots produced lucrative benefits.)

The limits of provincial authority in controlling sand sucker activity became apparent to the residents of Pelee Island in the spring of 1914 when a delegation visited Dr. Anderson, the Member of Provincial Parliament for South Essex. The delegation pleaded with Anderson “to have something done to save the island from annexation [to the United States] by the sand sucking method.”<sup>222</sup> He told them he could do nothing. As the owners of Fishing Point and its adjacent water lots, Homegardner and Hendrickson were acting within their legal rights. Despite Anderson’s response, a town council delegation arrived at Queen’s Park in Toronto later that same spring, this time armed with a petition signed by most of the island’s property owners.<sup>223</sup> They appealed to W.H. Hearst, the province’s premier. Hearst sent Hutcheon, the engineer, who recommended no further action.

At Point Pelee, efforts to stop sand sucker activity mounted too. By 1917, residents became so worried and anxious about the situation that they formed a local committee to tackle the issue. They contracted the local civic engineer, Alex Baird, to survey the

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<sup>219</sup> Point Pelee Naval Reserve—Cancellation Lease C. W. Cadwell of Lot “A” and Transfer Balance of Said Lot to Naval Service Dept. [Department] for Life Saving St. [Street]—Min. Int. [Minister of the Interior] 1915/06/10 Order-in-Council 1915-1381, LAC Privy Council Office.

<sup>220</sup> February 7, 1935, Memo for the Acting Deputy Minister of Mines Re: Cadwell Dredging Company, Limited, from Supervisor of Dredging Operations to the Acting Deputy Minister, 1, in AO Damage Monitoring Files.

<sup>221</sup> Such a provision existed in a 1911 lease the Dominion government issued to Spencer Stone of Chatham to dredge off the shores of Rondeau Harbour and Point Pelee. Rondeau Harbour and Pelee Point License to Spencer Stone of Chatham, Ontario, LAC Privy Council Office.

<sup>222</sup> “Hauling Away Pelee Island,” *London Advertiser in Echo Soundings*, 81.

<sup>223</sup> *Ibid.*, 82.

“southerly portion of the Naval Reserve at Point Pelee.”<sup>224</sup> Nearly forty years before, Baird had conducted another survey of the area for the Department of the Interior. The observations made in his November 17, 1917, report to the local committee reveal a landform transformed by erosion.

Baird noted that nearly 30 years earlier in 1889, the “sand bar forming the southern extremity of the Point and protecting it from erosion by the action of the Lake waters, extended a long distance from the end of the Point out into the lake.” By the fall of 1917, however, “I find that this sand bar has entirely disappeared and the Lake waters now cover where it was formed and located and these waters have encroached in upon and submerged the south end of the Point or Lot A” (where Cadwell’s lease to remove sand and gravel had been in effect). Baird estimated the loss to be about 570 yards (523 metres) and found more erosion on the side of Lots A and 1 on the reserve. He discovered enough erosion in other areas along the point to warn the township committee that all it would take would be a storm for the water to break through “and inundate the low-lying lands to the west thereof that may cause considerable annoyance and probable damage to the proclaimed and fertile lands within the Marsh drainage systems of your Municipality.”<sup>225</sup>

Baird noted his frequent visits to the location over his 40 years of residency in the area. “[N]ot until recent years” had he noticed “much, if any, change in the formation or location of the sand bar south of the end of the Point, that has now disappeared.” Sand suckers removing sand and gravel “and thereby changing and diverting the course of the Lake currents there, that aid in the destruction and damage that is now being carried out in that vicinity,” was the only reason he could think of causing the loss.<sup>226</sup>

In December, members of Essex County Council, aware of the erosion issues at both locations and very likely with Baird’s report to the Point Pelee committee in hand,

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<sup>224</sup> November 27, 1917, Letter from Alex Baird to Adolphus Armstrong, Reeve of Mersea Township, AO Damage Monitoring Files.

<sup>225</sup> Ibid.

<sup>226</sup> Ibid.

resolved to notify the Ontario minister of Lands, Forests and Mines and local MPPs of “the grave damage to Pelee Island owing to the action of the sand suckers in removing sand and gravel from the bar projecting from Fishing Point.”<sup>227</sup> County council and local townships petitioned the Dominion government as well. “The government at Ottawa deemed the matter to be one not coming within its jurisdiction,” noted Thomas Gibson, the deputy minister of the Ontario Department of Mines, in an internal memo, and the province demurred on moving ahead politically as well.<sup>228</sup> Instead, the government offered to join Pelee Island township in taking the issue to the courts.<sup>229</sup> In February 1919, the two governments and a handful of residents initiated legal proceedings against the owners of Fishing Point to obtain a precedent-setting ruling.

A change in provincial political governance in 1919 brought this new support to the islanders’ case. That year, Ontarians ousted the Progressive Conservatives of William Hearst and replaced them with a coalition government headed by the United Farmers of Ontario. The new party, with the subsequently unfortunate acronym of UFO, made a point of championing the Pelee Islanders. E. Bailey, solicitor to the province’s new attorney general, William Raney, spoke optimistically of obtaining a ruling against the Ohio sand sucker operators: “There would seem no doubt that a *prima facie* case has been established on an action for damages and there is an English case, *Attorney General vs. Tomline* - 12 Chancery Division 214, and 14 Chancery Division 58 in which the Attorney General in England took action against a defendant in an almost similar state of affairs,” he wrote to Raney in February 1919.<sup>230</sup> As the province and township prepared for the courts, however, they quickly ran into hurdles created by the fractured regulation of the Great Lakes waters.

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<sup>227</sup> May 4, 1918, Report from Morris to Pelee Island Council, 4, AO Damage Monitoring Files.

<sup>228</sup> February 26, 1921, Gibson Pelee Island Memo, 4, AO Despatches.

<sup>229</sup> Political officials at all government levels may have considered the island township as the best candidate to build a case around because it would not have to involve the Dominion government. Dragging the Dominion into the argument would have most certainly raised the tricky question of who had jurisdiction over the sand sucker activity at Point Pelee.

<sup>230</sup> February 3, 1919, Memo for the Honourable Attorney General, from E. Bailey to William Raney, 1–2, AO Attorney General Criminal and Civil Files.

One of these, discovered the year before by the township while preparing its legal case, was that no special provision had been made under the Territorial Provisions Act to make the waterbed surrounding Pelee Island a part of the municipality. Instead, the Lake Erie Sand Company's "subaqueous" property belonged to the Township of Gosfield South on the mainland, not the island municipality.<sup>231</sup> Despite that relationship, the Township of Pelee Island had been collecting "substantial revenue" in taxes since the sand sucking operation had begun operating, its lawyers, Windsor-based Kerr & McNevin, told the province's attorney general in a January 16, 1919, letter. The lawyers were asking, with some urgency, for the attorney general to help persuade the upcoming session of the provincial legislature to shift the property to the island township's jurisdiction. "The Township is about to engage in litigation with the company to prevent it excavating sand and gravel in such manner as to injure the shores of the Island and it is likely that the company will strike back at the Township if it can," the lawyers wrote. "As the operations of the company have already put the township to great expense in protecting its shores and roads, it certainly would not be fair to the Township to deprive them of the revenue which they have been receiving."<sup>232</sup> The provincial government adjusted the boundaries in September 1919 by enacting an order of the Lieutenant Governor in Council.<sup>233</sup>

Five months later, in February 1920, Ontario Supreme Court Justice J. Lennox dismissed the action. Lennox determined that the township had not proven the sand suckers were to blame for the island's erosion problems but had instead relied on circumstantial and opinion evidence, "the result of which is based upon inference." However, he did acknowledge that the islanders' belief about the impact of the sand suckers "was not irrational, and their attempt, under the circumstances, was not unreasonable."<sup>234</sup> Nor did he envision that his decision would end the legal effort because he also decided not to

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<sup>231</sup> January 16, 1919, Letter from Kerr & McNiven to the Attorney General for Ontario, 1–2, AO Attorney General Central Registry Files.

<sup>232</sup> January 16, 1919, Kerr & McNiven Letter, 2–3.

<sup>233</sup> Unsigned, Undated Memo for the Attorney General, 2, AO Attorney General Central Registry Files.

<sup>234</sup> February 14, 1920, Judgement of Lennox, AO Despatches.

award costs, explaining that he didn't want to "fetter" the right of appeal "by annexing a condition."

Yet the trial itself revealed another stunning legal discrepancy: Peregrine McCormick, the applicant for the original patent for the Fishing Point water lots, obtained the properties under false pretense. In his original application, he had claimed he needed the lots to protect the point from sand sucker operators. Justice Lennox noted in his decision, however, that testimony from William Hendrickson indicated McCormick had discussed the possibility of obtaining the patents with an eye to allowing sand sucker operators to take aggregate from the properties for a fee, something which he had discussed with some operators before filing his application. Hendrickson had been one of those operators and was now president of the defendant company. "It does not appear to me to be improbable that the man who dealt with McCormick in 1896 had an inkling of his proposed method of procedure," Lennox wrote.<sup>235</sup> The potentially fraudulent act would provide government officials with their first inkling of how to tackle the obstacle of private ownership that had, so far, thwarted their attempts to get industrialism's floating agents of erosion under control.

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<sup>235</sup> February 14, 1920, Judgement of Lennox, 5–6, AO Despatches.

## Chapter 4: Engineering protections

### 4.1 The sand suckers fight back

Following the February 1920 failure of the Ontario and the Pelee municipal governments' court case against the Lake Erie Sand Company and its owners, Pelee Island residents and township officials redoubled their efforts to persuade provincial politicians to introduce protective legislation.<sup>236</sup> Recognizing that any political action would carry international implications, provincial officials hesitated on how best to approach the matter. William Raney, the province's attorney general, ruled out an appeal of the Lennox decision on the advice of Harry White, a Toronto lawyer he had engaged to represent the province at the trial and advise on policy options.<sup>237</sup> (The township would pursue an appeal on its own.<sup>238</sup>) White downplayed the chances of a successful appeal: "The proposition which the plaintiffs started out to prove," he explained to Raney in February 1920, "was undoubtedly a difficult one to establish as a matter of affirmative evidence."<sup>239</sup> Where opportunity might lie instead was in Lennox's observation that the original applicant had made "misrepresentations" to obtain the water lots adjacent to Fishing Point. White suggested the province consider rescinding the patent.

On the advice of yet more lawyers, Thomas Gibson, the deputy minister of mines, determined in March 1921 that the only grounds to cancel a patent were a "clerical error, wrong description of property, etc." Otherwise, the provincial government would have to introduce legislation to cancel the patent, necessitating a public inquiry.<sup>240</sup> More digging revealed that a Crown land sale could be cancelled under the Public Lands Act if fraud was discovered, but the provision applied only to the initial property purchaser.

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<sup>236</sup> February 26, 1921, Memo Re: Pelee Island from Thomas Gibson to Ontario Minister of Mines, 5, AO Despatches.

<sup>237</sup> February 18, 1920, Letter from Harry White to William Raney AO RG 13-13 Central Registry of the Department of Mines [Henceforth AO Department of Mines Central Registry].

<sup>238</sup> March 29, 1920, Memo for the Attorney General, Re: Pelee Island from Thomas Gibson, Deputy Minister of Mines, 1, AO Department of Mines Central Registry.

<sup>239</sup> February 18, 1920, Letter from White to Raney, AO Department of Mines Central Registry.

<sup>240</sup> March 29, 1920, Gibson Memo, 2, AO Department of Mines Central Registry.

Convinced that the Fishing Point owners would take the matter to court if the province tried to apply the law, White encouraged Raney in an April report to avoid any legal actions to reacquire the Fishing Point water lots, or “only as a last resort.” An argument that demonstrating the provincial action was in the public interest would hinge on establishing a relationship between the sand-sucking activity and Pelee Island’s erosion problems, and the Lennox ruling had been unequivocal on the lack of evidence.<sup>241</sup> White, on further reflection, also doubted that rescinding the patent would be a comprehensive enough action to control sand sucker activity at the island. He pointed out that one of the islanders’ complaints against the Erie Sand operations was their expansion of dredging beyond the patented water lots.

An injunction based “on the assumption that the bed of the lake extending to the international boundary is vested in the Crown in the right of the Province” could halt the activity, White suggested. Yet once again, the Toronto lawyer urged Raney to be cautious about pursuing court action. He did not doubt the correctness of the assumption of provincial ownership of the Great Lakes’ waterbeds: “I am told that the Province has always claimed the right to grant patents of water lots along the shores of the Great Lakes and that the Dominion government has not questioned that right.” This ownership, however, had not been made explicit, and in this particular case, “the possibility of the Dominion Government questioning” the validity of the patent under scrutiny “is expressly mentioned.”<sup>242</sup> White was possibly referring to the Dominion Department of Indian Affairs’s lingering question concerning First Nations’ claim to the island.<sup>243</sup>

Then there were the practicalities. Obtaining an injunction to prohibit actions beyond the water lot might be feasible, but how to enforce it in the lake’s expansive waters? “It would probably be necessary to have special officers and patrol boats at the point in question during the whole season, and a great deal of expense would undoubtedly be

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<sup>241</sup> April 9, 1920, Re: Pelee Island. Opinion, Harry White to William Raney, 12–13, AO Department of Mines Central Registry.

<sup>242</sup> Ibid., 15–16.

<sup>243</sup> Leclair, *Caldwells of Point Pelee and Pelee Island*, 11–12. Leclair examines the Dominion government’s questions about the patent.

involved,” White wrote. He also downplayed the chances of the province acquiring the evidence to support a criminal proceeding to recoup the theft of material on Crown land: “The difficulty in such a proceeding would be to secure absolute proof of guilt.”<sup>244</sup>

White instead favoured introducing legislation to either add a provincial tax on all sand and gravel being removed from Lake Erie, such as the one recently imposed on natural gas extraction in western Ontario, or “prohibit the removal of sand and gravel without Government license.” He endorsed the latter approach because it would put the control of licensing at the discretion of the Lieutenant-Governor-in-Council, “and there would be no danger of the exercise of the discretion being in any way interfered with by the Courts.” Licensing would be a powerful tool to control where aggregate mining took place throughout the Great Lakes watershed; it could encompass other measures to control dredging activity, such as the right to inspect operations to ensure the volumes removed were the same as those reported.<sup>245</sup> Such a move would assert the province’s right to control natural resources in much the same way it already controlled mining in northern Ontario.<sup>246</sup>

As provincial officials deliberated their approach, others clamoured for the provincial government to do something about the sand sucker presence at Pelee Island and Point Pelee. In April, the Ontario Historical Society passed a resolution entreating the province and the Dominion government, giving voice to the growing sense of panic among wildlife conservationists that all could be lost if “these fertile historic landmarks and their worthy patriotic inhabitants” were not rescued “from the exploitation of foreign profiteers.”<sup>247</sup> The organization’s resolution brought voice to the growing wildlife and nature conservationist movement in southwestern Ontario, whose members had seen their

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<sup>244</sup> April 9, 1920, Re: Pelee Island, Opinion, Harry White to William Raney, 16–17, AO Department of Mines Central Registry.

<sup>245</sup> Ibid., 11–17.

<sup>246</sup> By exercising the right to control natural resources on portions of the Crown-owned waterbed, the provincial government also could have asserted its case for provincial ownership of these areas because the province treated them precisely as it did the dry, Crown-owned land that fell under its jurisdiction.

<sup>247</sup> April 9, 1920, Erosion of Pelee Island and Point Pelee, Resolution Passed by the Council of the Ontario Historical Society, AO Series RG 3-4 Premier E.C. Drury Correspondence Box 26 [Henceforth AO Drury Correspondence 1920].

efforts to protect Point Pelee's inland marshes and forests rewarded in 1918 with the federal designation of its naval reserve as a national park.<sup>248</sup> The historical society's resolution described both the island and Point Pelee as sites of significant natural and historical heritage, "rich in the historical achievements of our people, showing frequent and abundant traces of prehistoric habitation; the last resting-place, in the spring and fall of our migratory birds of all varieties."<sup>249</sup>

By early May, the provincial government reached the final stages of passing legislation to license sand-sucking operations.<sup>250</sup> Amendments to the 1914 Beach Protection Act constituted the UFO's approach. The proposed amended legislation applied to Lakes Erie, Huron, and Ontario and to any adjoining channels or entrances, shorelines, sandbars, and flats.<sup>251</sup> The annual licensing fee of \$100 applied to everyone, even if they owned the property, and was levied against individual boats rather than the companies which operated them. The Lieutenant-Governor-in-Council set the fees. Fines for

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<sup>248</sup> O'Neill, *Birding at Point Pelee*, 46–47. Bob Montgomerie, "Great Lakes Ornithological Club," American Ornithology Society (website), August 7, 2017, <https://americanornithology.org/great-lakes-ornithological-society/>. Tina Merrill Loo, *States of Nature: Conserving Canada's Wildlife in the Twentieth Century* (Vancouver: UBC Press, 2006), 88. Sharon Hill, "Playground or Protection? 100-Year-Old Point Pelee National Park Finds a Balance," *Windsor Star*, March 19, 2018. The point had earned a reputation in Canada and the United States as a highly valued destination for naturalists and ornithologists well before it became Canada's eighth national park in 1918. That reputation resulted from the efforts of the Great Lakes Ornithological Club members, who had built their clubhouse near the tip of the point in the early 1900s. Their members were highly influential in advancing the study of natural sciences in Canada. They were among the first to popularize the point as a significant stop-over place for migrating birds. Percy Taverner, one of the club's members and the Dominion's first ornithologist, became the first in Canada to band birds to track their migrations. Taverner also initiated the effort to make the Dominion-held lands at the tip of the point into a national park. These conservationists recognized that the point and its remaining wetland areas offered an essential resting point in migratory birds' twice-yearly journeys. Over their years of visiting and studying the point, the club's members also realized that area development that included aggregate extraction, both on and offshore, farming, and logging were threatening the wildlife habitat. Establishing the area as a park brought added legislation to control such activities within its boundaries, and the point became Canada's first conservation park.

<sup>249</sup> April 9, 1920 Council of the Ontario Historical Society Resolution, AO Drury Correspondence 1920.

<sup>250</sup> May 19, 1920, Memo from P.E. Titus to the Honourable Mr. Mills, 1, AO Department of Mines Central Registry. In this memo to Harry Mills, minister of the Department of Mines, P.E. Titus, the solicitor for the Department of Lands, Forests and Mines, noted that "in order that it may clearly appear that the Province proposes to exercise control of the land covered by the waters in question, it is advisable that an act be passed preventing persons from removing the soil except under a license, grant, or other permission from the Province."

<sup>251</sup> Read the correspondence and notes in AO Despatches to see a discussion of the changes in 1920 to the Beach Protection Act of 1914.

violating the Act were boosted to \$1,000 from the previous \$40, but prosecution of a violation required written authorization from the province's attorney general.

As the amendments to the Act neared final reading on May 10, 1920, the Great Lakes aggregate dredging industry began to fight back. That day, Premier Ernest Drury received a lengthy and ominous telegram from James T. Begg, congressman for the thirteenth Ohio district and a member of the U.S. House of Representatives Committee on Foreign Affairs. "Commercial relationship between two countries in past has been so satisfactory to both that I am sore [sic] no one in either country desires anything to happen that will in any way lessen that good spirit," Begg wrote, a barely disguised threat.<sup>252</sup>

That day as well a memo arrived on Drury's desk, this time from the solicitors for the Homegardner Estate and Hendrickson, owners of Lake Erie Sand. Published as a pamphlet, the memo was clearly intended to be circulated far beyond the office of Ontario's premier. In it, the business owners hinted at preparations for a court case to protect their island operations. They argued that Peregrine McCormick's request for the water lots adjacent to Fishing Point lacked the subterfuge described in Lennox's decision: "It may be he was honest in his then intent and subsequently conceived the idea of selling the land." They asserted that the township's allegations against the sand suckers were a ploy to solicit shore protection from upper-level governments and severe erosion had taken place on the island's shoreline well before the arrival of sand suckers; they referred to Justice Lennox's decision against the islanders and how even the province's engineer, James Hutcheon, had failed to see a systemic impact. The proposed legislation, they argued, was "confiscatory" and directed against "non-residents and non-voters at the request of a small body of voters." Such a move by the government "destroys the defendants' rights enjoyed under the English law for centuries and which could not in the United States be interfered with by the Legislature without compensation."<sup>253</sup>

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<sup>252</sup> May 10, 1920, Telegram from James T. Begg to the Honourable E.C. Drury, AO Drury Correspondence 1920.

<sup>253</sup> Undated Memo—Regarding Bill to Amend Beach Protection Act, from Tilley, Johnston, Thomson & Parmenter, 1–3, AO Drury Correspondence 1920.

H.A. Gerhardstein, president of the Great Lakes Sand and Producers Association, also telegrammed a terse message: the association would meet Saturday to discuss the proposed legislation.<sup>254</sup> Gerhardstein, perhaps making a veiled threat, observed that association members “operating from Detroit and Toledo furnish sand and gravel to Ontario Municipalities.” He also explained that the sand types on either side of the international border were “entirely different” and the “amendment might interfere.”<sup>255</sup> He asked if a hearing for the association could be arranged.

Responding a day later (May 12), Harry Nixon, the provincial secretary, referred to “[y]our wire” in a telegram. “Bill passed House, but will see you have opportunity to make representations before Government acts.”<sup>256</sup>

After the Act passed, the Department of Mines wasted no time issuing licences to Canadian and American operations so that commercial dredging throughout the Canadian portions of the lakes could resume. The provincial government had paused the activity until it resolved its approach toward control. (Erie Sand had suspended its operations at Pelee Island a year earlier because of the court action.) One of those licences went to an Erie Sand boat to dredge at Dummy Island, a submerged sandbar south of Pelee Island. The licence was compensation for the department’s refusal to allow dredging at the company’s Fishing Point property.

The provincial government had imposed the new legislation and the accommodation to Erie Sand to resolve the issue for good. Instead, these measures escalated the conflict between the province and the Great Lakes sand-sucking industry. By August 1920, the dispute threatened to affect international relations between Canada and the United States, with Begg, the Ohio congressman, spearheading the protest against the new legislation. Begg and other U.S. political officials argued for the law to be changed based on a

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<sup>254</sup> May 11, 1920, Telegram from A. Gerhardstein to the Honourable H.C. Nixon, AO Series RG 8 Box 109 A Sessional Material Beach Protection Amendment Act (1920) Provincial Secretary’s Correspondence [Henceforth AO Beach Protection Amendment Act, Provincial Secretary’s Correspondence].

<sup>255</sup> May 11, 1920, Telegram from Gerhardstein to Nixon, AO Beach Protection Amendment Act, Provincial Secretary’s Correspondence.

<sup>256</sup> May 12, 1920, Telegram from H.C. Nixon to H.A. Gerhardstein, AO Beach Protection Amendment Act, Provincial Secretary’s Correspondence.

conflation of two concepts of rights. One was the right to compensation for confiscating property in the public interest enshrined in the American constitution.<sup>257</sup> The other was a pledge in the first article of the 1909 Boundary Waters Treaty to equal treatment “under the laws and regulations of either country in its own territory” in the navigable waters that the two countries shared. Neither applied to the Pelee Island situation.<sup>258</sup>

“As I stated to you and your cabinet,” Begg wrote Drury on August 2, “the controversy between the sand companies and that section of the province is not a quarrel between two men, but that it has an international aspect that if pressed would compel attention from both governments.”<sup>259</sup> He warned that if the consular agencies could not work it out, a protest through diplomatic channels would be next.

Begg said the Dummy Island licence was inadequate compensation for Erie Sand’s loss of rights to pump at Fishing Point. The new location was twice the distance to Sandusky than the distance from Fishing Point, and the new location’s exposed position on the lake meant boats took longer to dredge the sand spoils. “They are now able to get about 40 percent of their normal output,” he wrote.<sup>260</sup> Without some adjustment, the business would fail “and their property rendered useless without compensation.”<sup>261</sup>

Drury’s response came eight days later. In a game of diplomatic “chicken,” he pointed to Justice Lennox’s observation that the original grant for the Fishing Point water lots was obtained fraudulently and that Hendrickson, president of Erie Sand, had likely known. Aware that the province’s legal case for reclaiming the water lots was weak, Drury

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<sup>257</sup> See Fifth Amendment of the U.S. Bill of Rights.

<sup>258</sup> See Article II of the 1909 Treaty Between the United States and Great Britain Relating to Boundary Waters and Questions Arising Between the United States and Canada. In Ontario, property law was the instrument that these property owners used to establish in the courts their right to use their property as they wished. The latter argument concerning equal treatment in navigable waters did not apply to most sand-sucking activity in Canadian waters (or U.S. waters for that matter) when these boats dredged in shallow near-shore areas not typically used for navigation. Indeed, because the waters off Fishing Point on Pelee Island were not considered navigable, the Dominion government initially declined to become involved in the issue.

<sup>259</sup> August 2, 1920, Jas. T. Begg Letter to the Honourable E.C. Drury, 1, AO Drury Correspondence 1920.

<sup>260</sup> *Ibid.*, 2.

<sup>261</sup> April 16, 1918, Memo from Hutcheon, 2, AO Damage Monitoring Files.

nevertheless hinted the matter could end up in the courts, which, he implied, would suspend Erie Sand's operations until they reached a final decision. The province, he wrote, "will have no other course than to await further developments..."<sup>262</sup>

Those developments had already begun to unfold even before Drury replied to Begg. On August 7, Sir Auckland Geddes, Great Britain's ambassador to the United States, received a letter from Bainbridge Colby, U.S. secretary of state. Colby echoed Begg's criticism of the province's decision to withhold the owners' licences for their property and redirect them instead to Dummy Island. The provincial actions were arbitrary and discriminatory, he asserted. The approach "further appears to inflict severe losses and hardships on the American interests directly concerned, and great inconvenience on those engaged in the building and construction industry in the region of Lake Erie who rely on Pelee Island as a source of supply of building sand." Calling sand sucking "a useful enterprise," he noted that the owners of Erie Sand feared bankruptcy because they could not fulfill their contracts.<sup>263</sup>

In October, American officials discovered that the province had denied other American dredging companies licences and wrote the British ambassador for relief on their behalf.<sup>264</sup> The correspondence filtered slowly through formal channels, including the offices of the Governor General, the Canadian secretary of state, the Ontario Lieutenant-Governor, the premier, the secretary, the minister of mines, and the attorney general. Yet even the chain's complexity could not explain why, by late fall, provincial officials had failed to respond to the appeal. Fed up with the wait, on December 16, 1920, Thomas Mulvey, the Dominion's under-secretary of state, telegraphed the Ontario Lieutenant-Governor: "British ambassador asks by wire for reply are ministers prepared to furnish an answer."<sup>265</sup>

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<sup>262</sup> August 10, 1920, E.C. Drury Letter to Mr. Begg, 2-3, AO Drury Correspondence 1920.

<sup>263</sup> August 7, 1920, Bainbridge Colby Letter to Sir Auckland C. Geddes, 3, AO Despatches.

<sup>264</sup> October 19, 1920, Norman H. Davis Letter to "Excellency," AO Despatches.

<sup>265</sup> December 16, 1920, Telegram from Thomas Mulvey to Lieutenant-Governor of Ontario, AO Despatches.

Three days later, on December 20, Harry Mills, Ontario's minister of mines, responded. He blamed the delay on his office not receiving the letter that contained the inquiry from U.S. officials about relief "until now" and stalled for time by noting that provincial officials were awaiting the outcome of the islanders' appeal of Justice Lennox's decision.<sup>266</sup> He insisted the amended Beach Protection Act was not discriminatory because it applied to everyone, regardless of nationality, intending to mine sand in Erie's waters. As for allegations that the province had stopped other American sand sucker operators, he said that the ban "was for a short time only, the companies having been permitted to continue at work until the close of the season, and some being at work even now."<sup>267</sup>

Meanwhile, Gibson, the deputy minister of mines, had begun to develop a report about the Pelee Island situation. He sent it to the Dominion government in early March 1921:

It might be inferred from the tone of the correspondence from Washington, that the legislation is regarded as discriminatory in character, and directed against American citizens or companies as such. This, however, is not the case. The Act applies to aliens and British subjects alike. It is merely incidental that in its operation the Act affects the interests of American citizens. There is a market for Pelee sand and gravel in Sandusky, Cleveland and elsewhere on the southern shores of the Lake, but the effects on Pelee Island would have been the same if the sand and gravel had been removed by a Canadian company and carried to Canadian cities. The legislation is purely protective in character, and it is submitted that it comes squarely within the jurisdiction of the Legislature of Ontario.<sup>268</sup>

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<sup>266</sup> December 20, 1920, Letter from Harry Mills to Assistant Provincial Secretary, 1, AO Despatches. January 31, 1921, Letter from Thomas Gibson to Assistant Provincial Secretary, AO Despatches. In January, however, when Norman H. Davis, U.S. acting secretary of state, asked for a copy of the appeal decision, Thomas Gibson admitted that the case had not been argued but was expected to be shortly. The information earned a scathing response from Davis, who had been misled.

<sup>267</sup> December 20, 1920, Letter from Mills, 3–4, AO Despatches.

<sup>268</sup> February 26, 1921, Gibson Pelee Island Memo, 5–6, AO Despatches.

He also noted that the Ontario Court of Appeal had paused the case in March at the plaintiffs' request. The islanders asked for the pause because the provincial legislation had effectively curtailed the offending activity.<sup>269</sup>

The lack of obvious Canadian political action annoyed American officials as the situation persisted into spring. On March 19, Charles Hughes, U.S. secretary of state, wrote to Sir A. Geddes, ambassador of Great Britain, asking the Dominion government to intervene by exercising its right to strike down the law in the year that followed enactment: "I cannot believe that it is the intention of the Canadian authorities arbitrarily to deprive American citizens of vested rights lawfully acquired, nor to subject them to undue hardship by the suppression of a useful enterprise."<sup>270</sup>

Behind the scenes in the Dominion government, a plan of action was taking shape. On June 1, 1921, Doherty, minister of justice, assured the Privy Council that the provincial Act was not biased. Doherty based his finding on Gibson's report. He also observed that the suspension of sand sucker activity at the island had produced a positive effect, according to residents. "[T]he bar at Fishing Point has begun to reappear and the detritus of the shores is now finding a losing place on the same, with every indication that the former degree of protection which these bars afforded will be restored, if operations continue to be prohibited." That the commercial dredging had not affected the island's shores, therefore, "cannot be said with certainty" or that the Act in itself "is unjust or unreasonable exercise of local powers." The Dominion lacked authority over the water lots, he wrote, because they were not used for navigation. He recommended that the Dominion government "exercise no direction or control" and predicted the U.S. federal government would recognize that the Ontario legislation was fairly applied to all commercial dredgers regardless of nationality.<sup>271</sup> On June 27, 1921, the Committee of the Privy Council approved Doherty's recommendation.<sup>272</sup>

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<sup>269</sup> Ibid., 5.

<sup>270</sup> March 19, 1921, Letter from Charles Hughes to Sir Auckland Geddes, 3, AO Despatches.

<sup>271</sup> June 1, 1921, Report from Chas. J. Doherty to the Governor-General-in-Council, 6-7, AO Despatches.

<sup>272</sup> June 1, 1921, Letter from G.G. Kezar to the Governor-General-in-Council, 2, AO Despatches.

Finally, the conflict that had snowballed into an international incident appeared to be resolved. No further correspondence from U.S. officials appears in the provincial files. As Doherty anticipated, the U.S. Department of Justice told the sand sucker operators that they must respect the Ontario law.<sup>273</sup> Nevertheless, in southwestern Ontario waters where the conflict first began, sand sucker activity continued to disturb not only shorelines, but also political relations and economic activities. Increasingly, these disruptions took on an anti-American tone.

Indications of this continued disturbance surfaced briefly soon after the Beach Protection Act amendments passed with the widely publicized revelation of allegations that the American sand sucker operators had attempted to bribe a public official.<sup>274</sup> In June 1920, Andrew Hicks, the UFO's party whip, announced that Milton Fox, the party's Member of Provincial Parliament for South Essex, had told him "an American concern" that was "removing sand from Pelee Island for the building of roads in the United States" had tried to bribe him to "drop the bill [to introduce sand sucker licensing] he had brought before the House and not work to prevent the removing of the sand."<sup>275</sup> The province's Privileges and Elections Committee convened a hearing into the matter in March 1921.<sup>276</sup> During the hearing, Hicks initially testified that he had heard Fox say that he had been offered \$20,000 to switch his vote on the Beach Protection Act but retracted his claim after Fox testified that he had told Hicks "of the details of a proposed settlement whereby the Sandusky company offered to pay Pelee Island township \$50,000 to settle a dispute between them."<sup>277</sup>

Weeks after the UFO government resolved the bribery allegation, a resolution from Essex County Council arrived on the desk of the provincial secretary, calling for a blanket ban of sand suckers "from the shore of Lake Erie or vicinity." Two incidents prompted the

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<sup>273</sup> Shumaker, "Charles Dick."

<sup>274</sup> "Fox Tells of Pelee Island Bribery," *The Globe*, June 22, 1920, 1. "When Hicks Made One Definite Charge," *The Globe*, June 21, 1920, 1. "Raney Summons Hicks to Explain," *The Globe*, June 19, 1920, 1. All news stories provide examples.

<sup>275</sup> "When Hicks made one definite charge," *The Globe*.

<sup>276</sup> "Hicks Charges of Bribery Come," *The Globe*, March 22, 1921, 1.

<sup>277</sup> Ibid.

county council's action. One was the discovery that Cadwell Sand and Gravel Co. had sublet its permit to a firm based in Sandusky (possibly Kelley Island Sand and Gravel).<sup>278</sup> Residents were also growing anxious about the volume of sand and gravel that Windsor-based Chick Contracting Co. was removing from Point Pelee's beaches.<sup>279</sup> They feared the company was triggering more erosion.

While Ontario government records remain silent on how the ban against dredging at Pelee Island was enforced, by the 1921 season the Dominion government had moved its customs official on the island to Point Pelee to improve the oversight of sand-taking activity there.<sup>280</sup> Local residents also criticized the customs presence. "Instead of heeding the petitions of residents the government allows them [American sand sucker operators] to come to shore," observed *The Windsor Star* in June 1921, giving voice to a sense that the provincial and federal governments had betrayed their southwestern Ontario constituents by not implementing a dredging ban at the point.<sup>281</sup>

That month, representatives from South Essex met with Raney to air their concerns and make clear they aimed their resentment at American boats and the American sand trade. "We cannot so much as take a stone from the American shore without risk of prosecution," Dr. J.W. Brien, the area's member of Parliament, told the province's attorney general.<sup>282</sup> Brien may have been referring to the precedent-setting 1911 Ohio

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<sup>278</sup> Unnamed article, *Amherstburg Echo*, April 8, 1921, quoted in *Echo Soundings: Marine News from the Amherstburg Echo, 1920–1929*, Vol. 17 (Amherstburg, ON: Marsh Historical Collection, 2021), 25. Undated Document, "Reasons Why Dredging Licenses Should Not Be Granted at Pelee Island," 1, AO Damage Monitoring Files. Kelleys Island operations had long worried residents and Ontario officials. The company was one of the largest aggregate producers on the Great Lakes and maintained extensive aggregate and quarrying operations on its namesake island, which was part of the same Erie archipelago as Pelee Island. In 1930, in a report on erosion in Erie's western basin, an unnamed Ontario official noted that the company had employed "unfair business tactics" for several years "in an endeavour to stop Canadian boats delivering sand to American ports."

<sup>279</sup> "Sand Suckers Still at It," *Amherstburg Echo*, August 19, 1921, quoted in *Echo Soundings: Marine News from the Amherstburg Echo, 1920–1929*, Vol. 17 (Amherstburg, ON: Marsh Historical Collection, 2021), 29: "[S]ince early last fall the beach between the end of the Point and for about a mile east has wholly changed in appearance," noted one local news account. "From the trees to the water's edge, the waters of the lake lap the shore but a few yards from the high ground."

<sup>280</sup> "Marine," *The Sandusky Star Journal*, July 18, 1921 2.

<sup>281</sup> "Sand Suckers Continue Taking Sand at Pelee," *Windsor Star*, June 2, 1921, 7.

<sup>282</sup> "Promises Immediate Heed to Erosion at Pt. Pelee," *The Globe*, August 18, 1921, 2.

ruling that compelled Hendrickson's Buckeye Sand Company to move its operations from Cedar Point; he could also have been referring to the Jones Act.<sup>283</sup> Raney promised a thorough investigation and action; two months later, on a visit to Point Pelee to review the damage, Mills, the minister of mines, reiterated the promise.<sup>284</sup> Over the next several months, however, the provincial government took no action.

No one questioned the southwestern Ontario residents' tendency to blame American operations and markets for the erosion problems. By the early 1920s, anti-American sentiment was well entrenched in Ontario. Early century tussles over hydro-electricity exports fuelled these resentments at the municipal level while Toronto businessmen fanned this sentiment at the national level to successfully undermine the Wilfrid Laurier Liberal government's negotiation of reciprocal trade with the United States in 1911, an arrangement they feared would affect their profits.<sup>285</sup> Indeed, even as the Ontario government wrestled with managing American sand sucker activity in Canadian Great Lakes waters, it was embroiled in another fight on both sides of the border over its taxation of unprocessed pulpwood exports to the United States.<sup>286</sup>

In Essex, Kent, and Lambton Counties, resentment stretched even further back to the imposition of the 1897 Dingley Tariff.<sup>287</sup> The U.S. tariff discouraged not only Canadian exports of processed lumber but also raw tobacco, a lucrative crop for area farmers

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<sup>283</sup> "Community Exploitation and Regulatory Destabilization," in this thesis, 48.

<sup>284</sup> "Promises Immediate Heed To Erosion at Pt. Pelee," *The Globe*, August 18, 1921, 2.

<sup>285</sup> Nelles, *Politics of Development*, 308, 320-321 and J.L. Granastein, *Yankee Go Home? Canadians and Anti-Americanism* (Toronto: HarperCollins Publishers Ltd., 1996), X, 40. Granastein describes anti-Americanism as a "tool" employed by "Canadian political and economic elites bent on preserving or enhancing their power."

<sup>286</sup> See, for example, Premier E.C. Drury's file on pulpwood exports in AO Drury Correspondence 1920.

<sup>287</sup> Burwell-McCormick Papers Notebook, 1, AO McCormick Family Fonds. This sentiment did not extend to Americans who increasingly chose to vacation in rural locations on the Canadian shores of the Great Lakes. Several prominent Ohioans, for instance, had banded together to establish a fishing lodge on Pelee Island in the late 1800s.

(especially those on Pelee Island) who had become used to selling their harvest to American companies.<sup>288</sup>

The other trade issues had affected southwestern Ontario residents, but nowhere was the effect of American dominance made more tangible than in sand sucker activity. For the farmers working former wetlands near shorelines, it would have been tempting to interpret these boats' daily presence in Canadian waters as a symbol of the rapacious American economy stealing the resources Canadians needed to advance their society. Shore erosion, in turn, embodied the damage to their way of life. Just as land loss threatened local agriculture, the increasingly urban and industrial society whose interests these boats served and represented undermined "traditional agrarian ideology" in a multitude of ways, from attracting people to cities and altering labour structures to focusing government resources on supporting the needs of an increasingly urban population.<sup>289</sup>

Soon after the passing of the Beach Protection Act amendments, the area's urban communities, such as Wallaceburg and Chatham, began to protest the presence of American sand suckers. Many community leaders felt these operators were making away with an essential resource for local urban development. Aggregate built roads and bridges; it built factories; it built homes. These industrializing centres needed access to reasonably priced aggregate to ensure a foothold in the fast-evolving modern economy. Yet these cities and towns and their county governments lacked access to land-based quarries because the region's heavy clay soils yielded few valuable aggregate deposits. Instead, they sourced most of their sand and gravel from companies that dredged in Lake Erie, Lake St. Clair, and the St. Clair and Detroit Rivers.<sup>290</sup> With commercial dredging now banned at Pelee Island and stricter controls exercised at Point Pelee through the new

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<sup>288</sup> January 25, 1907, Order of the Day Meeting Summary, Essex County Council. January 23, 1907, Notice of Motion, Essex County Council, AO County of Essex Fonds F1654 MSU 167.

<sup>289</sup> Nelles, *Politics of Development*, 192.

<sup>290</sup> Ontario Department of Mines, *Twenty-Ninth Annual Report of the 1920 Ontario Department of Mines, Being Vol. 29, Part 1, 1920* (Toronto: Legislative Assembly of Ontario, 1920), 35. Only one land-based gravel pit was listed as operating in the deep southwestern Ontario region: the Windsor Sand & Gravel Co. in Walkerville.

licensing system, these southwestern Ontario communities found themselves almost entirely dependent on gravel from the Dominion-controlled pumping grounds at the St. Clair River.

Prices for this gravel were more than reasonable; the municipalities did not pay market rates because the Dominion and provincial governments waived royalties on aggregate shipped to municipalities, and the municipal price schedule had not been updated for a decade. However, municipal officials worried that these advantages were working against them. Contractors in Detroit and along the western bank of the St. Clair River competed for the material; so did construction companies that won provincial contracts to build roads. More competition meant sand sucker operators could receive higher prices for the same product depending on whom they sold to, even when they took the provincial royalty of two cents per cubic yard into account. In 1922, for instance, International Sand and Gravel Co. charged Godson Co. \$1.75 per cubic yard for gravel delivered to Chatham. (The province contracted Godson, a Toronto-based construction firm, to build a highway from Maidstone to Lambeth.) Had International delivered that load of gravel to the same location for the city of Chatham, it would have been able to charge only 75 cents per cubic yard.<sup>291</sup>

Many local officials suspected that sand suckers juggled orders and skimmed on their municipal delivery commitments to reap better profits in the more lucrative American market. In 1922, for instance, Kent County had asked for 36,000 cubic yards of gravel but had received only 18,000.<sup>292</sup> Rumours abounded of ships from the American side of the border dredging the Canadian waters of the St. Clair River at night to avoid detection.<sup>293</sup> As 1922 rolled into 1923, another horrifying thought occurred to these

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<sup>291</sup> September 6, 1922, Cheque Payment Letter from the City of Chatham Treasurer to ISGC, IGLR Nicholson 8, Folder 16. July 4, 1922, Letter from W.P. Godson Co. to ISGC, IGLR Nicholson 8, Folder 35.

<sup>292</sup> "Hard Sledding for Gravel Bill," Undated News Article by Unknown Publication, Possibly *Chatham Daily News*, IGLR Nicholson 8, Folder 90.

<sup>293</sup> "Would Stop Exportation of St. Clair River Gravel," *Border Cities Star*, January 22, 1923, 2. This story first appeared in *The Globe* on January 15, 1923, 2.

officials: they could soon run out of gravel if the demand on the St. Clair River continued.

Two businessmen fanned this second wave of panic with dire predictions of dwindling supplies and skyrocketing prices. J.S. Fraser, a Wallaceburg lawyer, called for a blanket ban on sales of the St. Clair gravel to U.S. customers to conserve supplies. “It is just as important in the interests of the people of this province that gravel, as well as pulpwood, should not be exported,” Fraser told those attending a January 22, 1923, meeting in Chatham.<sup>294</sup> “We have got to stop Americans poaching on our preserves.”<sup>295</sup> Otherwise, municipalities would have to look as far north as Cape Hurd on the Bruce Peninsula (140 nautical miles—252 kilometres by boat—from Sarnia) to obtain a steady supply. Obtaining gravel from so far away would drive prices as high as \$2.50 a cubic yard, he predicted.<sup>296</sup>

That same month, Alex Snyder also warned that a fiercely competitive search for inland gravel pits was producing few results and driving up property prices. The Sandwich realtor, who clearly had a vested interest in boosting land values, noted that an unnamed buyer had secured 30 acres near Blenheim for a gravel pit for the princely sum of \$35,000. “A large washing plant is to be installed immediately, and the pit will be in operation in two months,” he told the *Border Cities Star*. He added that two railroads operating “in and out of Windsor” were scouring the area for a deposit of ballast gravel. “These railways need thousands of yards during the coming two years. At the very best, there are only three or four good pits in the two counties.” There had been some discussion too of the province developing an inland quarry to provide material for road building, something that the intense competition for supply would have threatened to put out of reach. Windsor Sand & Gravel Company was one of the lucky ones: the company,

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<sup>294</sup> Ibid.

<sup>295</sup> “Legislature to Be Asked to Prohibit Gravel Exportation,” Undated News Article by Unknown Publication, Possibly *London Free Press*, IGLR Nicholson 8, Folder 90.

<sup>296</sup> “Hard sledding.”

one of the largest local distributors, had found and bought a new pit near Leamington. But it could not keep up with demand, Snyder said.<sup>297</sup>

In late January, Robert Bracken, the West Kent County Liberal member of Provincial Parliament, announced plans to introduce a bill “designed to prohibit the export of gravel from the Province,” particularly from the bed of the St. Clair River.<sup>298</sup> If passed into law, the bill proposed levying a fine of \$1,000 for each offence and introducing a gravel control board. The board would control aggregate extraction and set prices for Ontario municipalities and road construction and repair. Bracken also proposed that the board license anyone who wanted to take aggregate and be imbued with the power to refuse or cancel these at its discretion.<sup>299</sup> “It has been suggested at the County Council meetings that the Wardens of Essex, Kent & Lambton Counties be the Committee to look after the Gravel or be known as the Gravel Control Board, but there is nothing definite on that matter yet,” noted Captain G.A. Sharen of Wallaceburg days after the announcement.<sup>300</sup>

From the outset, the bill faced problems, not the least of which was a matter of procedure: most of the waterbed aggregate occupied Crown land, and the province’s constitution did not allow a private member, which Bracken was, to introduce a bill that had the power to affect a Crown domain.<sup>301</sup> Bracken also failed to elicit the support of the UFO. Drury downplayed the bill’s chances of passing into law, noting that even if it did, Ottawa might “disallow” the legislation.<sup>302</sup> In April 1923, the bill failed second reading after being found out of order, “as it trespassed upon the Public Domain and must therefore be removed from the Order Paper.”<sup>303</sup>

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<sup>297</sup> “Gravel Pits Not Plentiful in District,” Undated News Article by Unknown Publication Identified in Writing as *Border City Star*, IGLR Nicholson 8, Folder 90.

<sup>298</sup> “Bills Introduced Would Alter Laws,” *The Globe*, January 31, 1923, 9.

<sup>299</sup> “Gravel Control Act Introduced by R.L. Bracken,” undated news article by unknown publication identified as *Chatham News*. “Gravel Pits Not Plentiful in District,” *Border City Star*?

<sup>300</sup> February 4, 1923, G.A. Sharen Letter to Frank Deane, IGLR Nicholson 8, Folder 90.

<sup>301</sup> “Fearful About the Gravel Bill,” *London Free Press*, Undated News Article, Possibly Published on March 1, 1923, According to March 1, 1923, Letter from G.A. Sharen to Frank Deane, IGLR Nicholson 8, Folder 90.

<sup>302</sup> “Hard sledding.”

<sup>303</sup> Ontario. *Journals of the Legislative Assembly of the Province of Ontario: 23rd January to 8th May 1923, Both Days Inclusive. In the Thirteenth Year of the Reign of Our Sovereign Lord, King George V,*

The bill might have failed, but the southwestern Ontario effort did result in a meeting between provincial, federal, and municipal officials to try to improve the management of the St. Clair pumping grounds. The meeting, however, produced few tangible results other than an agreement to increase municipal payments to sand sucker operators by 20 per cent for the 1924 season. Added to the increase was the condition that operators “export gravel to American points only after Canadian municipalities...have been supplied with sufficient quantities from time to time.”<sup>304</sup> This condition did not appear to be any different than one already existing in the operators’ annual contracts.<sup>305</sup> In addition, the new Conservative provincial government, elected in 1923, addressed the sand sucker situation at Point Pelee that had so worried local farmers by striking a deal with Cadwell Dredging to shift its operations away from the portion of the Cadwell sandbar closest to the point.<sup>306</sup>

Despite these efforts, concerns about erosion and American access to the supply of St. Clair River gravel continued to be a point of frustration for southwestern Ontario residents and municipalities, so much so that in late 1923, Kent County Council called for an investigation into the Dominion government’s supervision of the dredging at the river’s headwaters.<sup>307</sup> Discontent continued over the next several years; the dredging management and other developments were perceived to put the local gravel supply at risk.

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*Being the Fourth Session of the Fifteenth Legislature of Ontario, Session 1923*, Vol. 57 (Toronto: Province of Ontario, 1923), liv.

<sup>304</sup> “Hard Sledding.” February 7, 1935, Memo for the Acting Deputy Minister of Mines Re: Cadwell Dredging Company, Limited, from Supervisor of Dredging Operations for the Acting Deputy Minister, 1, AO Damage Monitoring Files.

<sup>305</sup> No. 107 Sand and Gravel Licence to International Sand and Gravel Company, March 20, 1922, Folder 40 BGSU. IGLR Nicholson 8, Folder 40. In a September 7, 1922, letter to International Sand and Gravel Company, Thomas Gibson reminded the company’s operators that all licensees at the river’s headwaters must “complete all municipalities which have been allotted to them, before exporting any more sand and gravel to the United States. It is one of the essential conditions of the licenses that these deliveries should be made ...”

<sup>306</sup> February 7, 1935, Acting Deputy Minister of Mines Memo Re: Cadwell Dredging Company, Limited, 1–2, AO Damage Monitoring Files.

<sup>307</sup> “Denies grant to Ridgetown,” *Border Cities Star*, December 10, 1923. The page number is illegible.

One incident in 1925 involved the Huron Sand and Gravel Company, which had leased nearly two miles (three kilometres) of Lake Huron shoreline from the Canadian National Railway. The company planned on sinking boats to create a breakwater to trap sand and gravel to sell to U.S. buyers.<sup>308</sup> At an Ottawa meeting to discuss the issue with Dominion officials, representatives from Kent and Essex Counties said the initiative would destroy the flow of gravel to the headwaters of the St. Clair. Citing interruptions to navigation, the Dominion government announced plans to quash the scheme.<sup>309</sup>

In 1926, Kent County municipalities again complained about the quality and volumes of gravel they received from sand sucker operators at the St. Clair headwaters. At the county council's December meeting, road superintendent Colby told councillors that the gravel received from these sand suckers "was not fit for road work. Councillors then arose, one after the other, and related difficulties encountered in receiving supplies of gravel until neighbours wearied of the narrative ..."<sup>310</sup> Their complaints, however, had become the least of the Dominion government's worries as governments on both sides of the border began to sound the alarm on a drastic decline in Great Lakes water levels.

## 4.2 New perspectives on Lake Erie morphology

Levels in the Great Lakes have always fluctuated, both between different seasons and over longer periods of time. Many factors affect the levels, including precipitation, runoff within the basin, and surface evaporation, as well as how much water travels between the lakes.<sup>311</sup> That lake levels fluctuated over time was common knowledge among those who monitored lake levels in the early decades of the 1900s. Despite that knowledge, the low levels that appeared in 1926 generated concern on both sides of the border.

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<sup>308</sup> "Dr. J.H. King Promises Probe of Gravel Situation," *Border Cities Star*, May 7, 1925, 5. The article notes that legislation passed in 1919 made a "railway directorate independent of the Government, and it could do what it liked so far as business policy went."

<sup>309</sup> *Ibid.*

<sup>310</sup> "Non-delivery of gravel will be investigated," *Border Cities Star*, December 9, 1926, 12.

<sup>311</sup> "Fluctuations in Great Lakes Levels," Government of Canada, January 25, 2022, <https://www.tides.gc.ca/en/fluctuations-great-lakes-levels>.

That year, levels in the St. Clair River at Port Huron, across from Sarnia, had plummeted more than 30 inches (75 centimetres) from the levels it had maintained for the previous decade.<sup>312</sup> The change was so great that shippers were struggling to use harbours, especially those in Lake Michigan and on the American side of Lake Huron.

American and Canadian governments blamed the other nation for the basin-wide drop. Canadian officials blamed American commercial dredging that took place in the Niagara River. They thought an even greater culprit was the ongoing water diversion at Chicago. There, the Chicago Sanitary and Ship Canal purposely reversed the flow of the Chicago River to draw Lake Michigan waters into the Mississippi River basin.<sup>313</sup>

The Chicago diversion was also generating concern south of the border. In 1925, the U.S. Supreme Court issued a decision to limit the volume of water that could be removed from Lake Michigan, and by 1926 five states had filed complaints with the U.S. Supreme Court.<sup>314</sup> But American officials suggested other factors may have caused the drop in water levels. Early in 1926, at a February engineering conference in Detroit, John Freeman, a member of the Engineering Board of Review of the Chicago Sanitary District and a past president of the American Society of Civil Engineers, suggested below-normal rainfall could be at play. Changes to aid navigation, such as the introduction of the Welland and other canals on Lake Erie and to the outflow of Lake Superior had also had an impact, he said.<sup>315</sup> Freeman suggested changes in levels, even those caused by the diversion in Chicago, could be mitigated by introducing regulatory controls into the Niagara, St. Clair, and Detroit Rivers. As the low levels continued to plague shipping as

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<sup>312</sup> *Great Lakes Water Levels, 1860–1990: Monthly and Annual Average Water Surface Elevations*, (Rockville, MD: U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Survey, 1992), 129.

<sup>313</sup> “An Overview of Great Lakes Diversions,” International Joint Commission, last updated 2022, <https://ijc.org/en/labc/watershed/great-lakes-diversions>. The need to improve the fast-growing city’s ability to remove waste had motivated the \$31-million public project. Once fully in operation in 1900, the reversal cut waterborne disease in the city by half.

<sup>314</sup> “To Stop Chicago’s Steal,” *The Globe*, March 4, 1926, 4.

<sup>315</sup> “Low Lake Level Not All Due to Sanitary Canal,” *Chicago Daily Tribune*, February 5, 1926, 6.

the year wore on, his suggestion prompted studies by the U.S. Army Corps of Engineers, that rounded out his research and added other culprits.<sup>316</sup>

In May, the Army Corps of Engineers cancelled commercial dredging licences on the Niagara River. In Chicago, Col. H.F. Miller unveiled a study that estimated the lack of “regulating works” such as weirs in the St. Clair River resulted in a loss of nearly \$18 million to lake carriers. He estimated that regulating works could raise levels in the lower lakes by more than a yard (or nearly a metre).<sup>317</sup>

Then, in July, *The Chicago Tribune* reported that engineers suspected that alterations to the Detroit and St. Clair Rivers were responsible for the low levels in harbours in Lakes Michigan and Huron.<sup>318</sup> A day later, the newspaper announced that the U.S. government had asked the Dominion government to cancel commercial dredging at the St. Clair River’s headwaters.<sup>319</sup> “We made a complete survey of the project, and were brought to the conclusion that the dredgers had done a great damage, and that the gravel removal had been an important factor in lowering lake levels and menacing navigation,” Col. E.J. Dent, district engineer in the U.S. Army Corps of Engineers, told *The Chicago Tribune*. Dent noted that while dredging occurred in other locations along the river, the change to the river slope had been so slight “that removal is wholly inconsequential.”<sup>320</sup> In a note asking the Dominion to cease and desist, the Corps observed “that the dredging of sand from the Canadian side of the St. Clair River has resulted in increased dimensions in the outlet channel and lowered lake levels.”<sup>321</sup>

It is possible that the move was retaliation against the Canadian complaints about the water diversion in Chicago and the U.S. dredging in the Niagara River. It could also have been an attempt by the Army Corps to seize control over the maintenance of the Great

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<sup>316</sup> “Niagara River Sand Dredging Is Stopped by Washington,” *The Globe*, May 5, 1926, 7.

<sup>317</sup> “St. Clair Works Called Cure for Low Lake Level,” *Chicago Daily Tribune*, May 12, 1926, 10.

<sup>318</sup> “St. Clair Flats Chief Offender in Lake Levels,” *Chicago Daily Tribune*, July 28, 1926, 4.

<sup>319</sup> “Ask Canada to Stop St. Clair Sand Dredging,” *Chicago Daily Tribune*, July 29, 1926, 10.

<sup>320</sup> “Dredging Gravel Said to Lower Level of Great Lakes,” *Rock Products* 29, no. 21 (October 16, 1926): 38. See quotation in this journal article.

<sup>321</sup> “Lowering of Lakes Is Blamed by U.S. on Sand Dredging,” *The Globe*, July 29, 1926, 2.

Lakes navigation channels. Ramya Swayamprakash asserts that the Corps used complaints about Canadian activities affecting the Great Lakes water levels as a strategy to take control of navigation channel dredging.<sup>322</sup> Along the St. Clair, the corps proposed that the governments work together to develop a policy to restrict dredging “to places in the connecting channels where it did not affect lake levels.”<sup>323</sup> The pause on commercial dredging at the headwaters became permanent, although dredging continued for several years along the St. Clair in locations that government engineers determined would not affect water levels.

As governments on both sides of the border tightened their hold over the commercial industry, residents tried to tackle the shoreline issues that persisted in the areas where the boats had worked. At Pelee Island, the erosion issue was far from resolved, contrary to what Gibson had told his superiors about the recovery of the island’s shores in 1921. Initially, shutting down the sand sucker activity at Fishing Point did seem to produce an improvement. The point, a mere 16 yards (15 metres) in 1919, grew to more than 650 yards (600 metres) by 1933.<sup>324</sup> Elsewhere along the island’s shoreline, problems persisted and had even escalated. During a 1929 visit, the Department of Mines’ inspector of surveys found the banks on the east side of the island that protected the farmland on the former marsh were “in a very dangerous condition, the storm of the 5th of May last having made great inroads into the bank, in some places leaving only a few feet of sand bank to protect this scheme against the inroads of Lake Erie.”<sup>325</sup>

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<sup>322</sup> Swayamprakash, “Hellgate to Highway,” 95. AO Damage Monitoring Files. According to an October 13, 1944, letter from J.F. McFarland, supervisor of dredging operations at the Department of Mines, the Dominion Government and the U.S. War Department had negotiated an agreement for Canada to end licensing in the St. Clair River. Even though navigation was involved, the International Joint Commission was not. It is not clear why this matter failed to trigger IJC involvement, but further research into the matter might help reveal expectations about the situations the commission was expected to manage in its early years.

<sup>323</sup> “Lowering of Lakes Is Blamed by U.S. on Sand Dredging,” *The Globe*.

<sup>324</sup> E.M. Kindle, “Geology of Pelee and Adjacent Islands,” *Forty-Fifth Annual Report of the Ontario Department of Mines* 45, Part 7, 1936 (Toronto: T.E. Bowman, 1937), 103–07. Quoted in Stone, “A Geographical Survey of Pelee Island,” 74. Note that nautical maps, which show a marked shortening of Fishing Point between 1906 and 1915, show no change in the point’s length between 1915 and 1934. See Figure 7.

<sup>325</sup> June 6, 1930, Memo Re: The Erosion of the Shores of Point Pelee from Inspector of Surveys to the Minister of Mines, 2, AO Damage Monitoring Files.

The persistence of erosion after the sand suckers were removed contributed to an impression among some government officials that residents had blamed commercial dredging to elicit financial help from upper-level governments to fix chronic shoreline erosion. This suspicion was hardly new; Hutcheon hinted as much in 1918 when he observed that shore erosion had become a “serious” issue for the island municipality which could not afford to fix the issue on its own.<sup>326</sup> So had the Lake Erie Sand Company’s owners in the pamphlet their lawyers had sent to Drury in 1920. A decade later, an anonymously authored Ontario government memo explicitly listed the money angle as its third point about why dredging licences should not be granted near the island.<sup>327</sup>

Some marvelled at how residents ignored the implications of their own actions. During one visit to Point Pelee to evaluate erosion, geologist A.P. Coleman observed road-makers’ teams carting away sand and gravel from the shoreline and spied tracks from other similar carts. Why had no one, not even the newspapers, commented on “this very serious interference with natural conditions,” he wondered.<sup>328</sup>

Coleman’s report reveals an underlying assumption that both nature and man could affect shoreline processes, but each produced a different range of impact. Coleman, as did most of the government experts who had studied these shorelines before him, understood that erosion and deposition worked together to make Point Pelee’s shorelines.<sup>329</sup> He also

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<sup>326</sup> April 16, 1918, Memo from Hutcheon, 3–4, AO Damage Monitoring Files.

<sup>327</sup> “Reasons Why Dredging Licenses Should Not Be Granted at Pelee Island,” 1, AO Damage Monitoring Files. “To grant Pelee Island financial assistance for protection works even remotely related to revenue accruing from sand and gravel operations would immediately bring similar requests for assistance from Point Pele [sic], Niagara Township, Sarnia Township and others.”

<sup>328</sup> September 25, 1930, *Report on the Erosion of the Shores of Point Pelee, Lake Erie* from A.P. Coleman, 5, AO Damage Monitoring Files.

<sup>329</sup> Coakley, *A Study of Processes in Sediment Deposition*, 16. Even as early as 1918, these experts knew that erosion and deposition were two parts of a larger circulatory cycle between the lake and its shoreline. During their inspection of Pelee Island in 1918, both Hutcheon and Morris remarked on these processes. They used them to support their opposing arguments on the relationship between shoreline erosion and sand sucker activity. (See Hutcheon’s and Morris’s reports in the AO Damage Monitoring Files.) At Point Pelee, H.B.R. Craig, the Dominion’s public works district engineer, was among the first to note that erosion and deposition were both taking place at different locations, so concluding what was causing the erosion was difficult. Ten years later, in the early 1930s, E.M. Kindle, performed the first study of water currents around Pelee Island.

assumed that these processes existed in balance: material lost from the clay cliffs along the north shore east of the point was transported by shoreline currents to the beaches of Point Pelee. “The process of moving sand and gravel southwards along the beaches has apparently reached a rough equilibrium, the gravel obtained from the clay cliffs keeping up the supply all along the two shores and steadily adding to the underwater deposits to the south,” he wrote.<sup>330</sup>

In such a system of replenishment, significant events, such as high waters or “some unusually severe storm,” might cause widespread erosion. Otherwise, “in the long run, if not interrupted by some extraneous cause, one may expect that the beach will be repaired by the action of the wind and waves.”<sup>331</sup> However, human activity produced only a localized impact. Dredging operations “seven miles or more away” were not “capable of weakening the beach protection,” whereas “hundreds of loads of gravel for road making” would affect only the location where the gravel was removed.

Ramya Swayamprakash similarly argues that when Army Corps engineers tackled navigational “improvements” in the Detroit River, they had little awareness of the cumulative impact of their project-by-project and as-needed approach on the whole hydrological system of the watercourse. They lacked the insight “not because they were blind to these system-wide effects but because they were acting in localized projects.” Different districts might share oversight of the same watershed, resulting in different groups of engineers assigned to individual projects in the watershed.<sup>332</sup>

Coleman’s report, however, hints at a conviction that also might have made it difficult to entertain the idea that cumulative activity could produce systemic impact. “For miles to the northeast of Wheatley harbour one can see that the clay banks, sometimes a hundred feet in height, are being undermined, the clay being removed and the pebbles and sand of the boulder clay being rolled into gravel to form the present beach,” he wrote. As these cliffs continually receded, they provided the materials to the beaches, ensuring that as the

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<sup>330</sup> September 25, 1930, Coleman, *Report on the Erosion*, 2, AO Damage Monitoring Files.

<sup>331</sup> Ibid.

<sup>332</sup> Swayamprakash, “Hellgate to Highway,” 61.

point's beaches and sandbars lost sand and gravel these were "steadily replenished."<sup>333</sup> In Coleman's eyes, nature's boundless abundance easily accommodated humanity's modest need for resources.

Consequently, with proper management of the minor impacts human activity had on these much larger processes, more than enough material would exist to maintain beaches and support activities such as dredging. All that was needed was to keep an eye on natural events, such as changes in water levels, and locate activities in places where they were not capable of inflicting damage. "[R]emoval of material from shoals miles to the south can have no appreciable effect on the beaches far to the north; but that the taking of large quantities of gravel from the beach at points where the dikes are low and narrow gives rise to very grave risk of flooding at times of unusually high water in stormy seasons of the year." The practice should be avoided, he wrote, and provided rough guidelines for the areas and times to avoid when taking gravel from the beaches.<sup>334</sup>

This belief in the abundance of aggregate circulating in shoreline waters helps explain why government experts and scientists took so long to understand that human-devised shoreline protections disrupted the material's circulation in water and exacerbated erosion just like sand suckers did when operating close to shore. Hampered by this blind spot, these experts and residents soldiered on with trial-and-error attempts to literally and figuratively "fix" the shorelines of Pelee Island and Point Pelee and its surrounds.

Their initial approach was to drive a wedge between erosion and deposition cycles to interrupt the currents that transported aggregate. In 1931, Pelee Islanders added 42 concrete groynes to protect a stretch of the island's western shore, an approach that was likely based on recommendations that arose from a study of near-shore currents by Kindle, the Geological Survey of Canada sedimentologist. Stretching 1.6 yards (1.5 metres) across and nearly 10 yards (nine metres) long, these groynes captured sand and gravel cycling in the currents to rebuild the area's beaches. The approach worked for a

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<sup>333</sup> September 25, 1930, Coleman, *Report on the Erosion*, 1–3, AO Damage Monitoring Files.

<sup>334</sup> *Ibid.*, 3–4.

few years before high waters undermined their effectiveness and contributed to their deterioration.<sup>335</sup>

At Point Pelee, park officials initially favoured plantings that secured soil and other methods to hold sandy beaches in place. In 1929, they planted black willow trees on the east beach to anchor the remaining soils and planted white willow poles along the east side of the point in 1931 to trap sand. O.S. Scheifele, of the Waterloo-based Natural Process Engineering Co., had sold park officials on “laying the poles about four feet apart in trenches in harmony with the slope of the bank, their feet in water or damp ground and their heads in the sun and air.” Doing so, he advised, would promote root and tree growth “that will defy the ravages of wave and storm action.”<sup>336</sup>

After he planted them, Scheifele tied the poles together with wire and anchored them “to protect them from damage until the roots have become established.”<sup>337</sup> Scheifele claimed the approach promoted rapid and “prolific” growth throughout the poles. His firm, contracted to do the work at Point Pelee, also introduced steel wire-mesh groynes 33 yards (30.5 metres) apart on the beach to help accumulate sand. Within a year, waves and ice had destroyed the groynes and the supporting poles.<sup>338</sup>

Provincial officials also commissioned Scheifele to apply the interventions to shoreline areas north of the park. They expressed optimism even as they acknowledged the approach needed some revision. In December 1933, J.F. McFarland, then acting supervisor of dredging operations, wrote the acting deputy minister of the Department of Mines about changes to the approach, including introducing a trench nearly at water level to better anchor the willow poles and employing sand to further secure the poles. “This

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<sup>335</sup> Stone, “A Geographical Survey of Pelee Island,” 65. Hutcheon, “Memo, for the Minister,” April 16, 1918, 3. Battin and Nelson, *Man’s Impact*, 68. Residents had also tried groynes in 1903, well before they had aired their concerns with the province, and they likely built them on the advice of an engineer. These stone-filled timber cribs along the island’s western shore rapidly failed to hold the beaches in place. Similarly, the Point Pelee naval reserve’s first caretaker had tried to control erosion through tree plantings in the late 1800s.

<sup>336</sup> O.S. Scheifele, “Beach and Bank Protection and Reclamation,” reprinted from *Contract Record and Engineering Review*, August 5, 1931, 1, AO Damage Monitoring Files.

<sup>337</sup> Ibid.

<sup>338</sup> Battin and Nelson, *Man’s Impact*, 67.

new scheme seems to be much superior to the original plan of lacing the poles on the beach and covering them with a shallow layer of sand,” he wrote.<sup>339</sup> The acting supervisor’s inspection of the same area in April 1934 suggested the willows were holding their own.

The acting supervisor had also noted at that time that water levels were lower and the beach, consequently, “a good deal wider.”<sup>340</sup> As higher water returned, the system began to fail. “The willow poles, which were replanted, are now covered with 4 or 5 feet of sand, and whether or not growth will take place through such a heavy covering is problematical,” McFarland wrote in 1935. “All that can now be seen of the replanting is the dead ends of the willow brush placed between the poles, to act as a mattress against wave action.”<sup>341</sup> He could no longer ignore the approach’s inadequacies.

Despite its poor record of success, the trial-and-error approach to protection continued. Up next in the late 1930s were “timber” groynes and “willow plantings” near the tip. They did not work either. In the early 1940s, Charles Clarke, a provincial forester and zoologist, recommended adding groynes and trees and planting more willows once the cyclical water levels receded. Storms in 1947 and 1948 overcame the groynes and undercut treed areas, ending up “hurling literally tons of sand 30 or more yards within the woods, visibly altering the vegetation.”<sup>342</sup>

Oak piling applied in staggered rows along the eastern shore followed, and in 1949 parks staff added it to more than 600 yards (550 metres) of east shore beach at the nature reserve. They added sheet piling at other points, and “concrete crosses were set along the

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<sup>339</sup> December 2, 1933, Memo Re: Willows Planted at Point Pelee from Acting Supervisor of Dredging Operations to the Acting Deputy Minister, AO Damage Monitoring Files.

<sup>340</sup> April 27, 1934, Memo Re: Point Pelee from Acting Supervisor of Dredging Operations to the Acting Deputy Minister, AO Damage Monitoring Files.

<sup>341</sup> May 15, 1934, Memo Re: Point Pelee from Acting Supervisor of Dredging Operations to the Acting Deputy Minister, AO Damage Monitoring Files.

<sup>342</sup> Battin and Nelson, *Man’s Impact*, 67, 119–20.

shore around the point.”<sup>343</sup> The sheet piling was removed when it failed to work, but more oak pilings were added in 1950.

By the 1960s, experts were proposing more aggressive protections to isolate what remained of Point Pelee’s shoreline from the lake processes. In 1960, they added a limestone break wall to the southwestern shore near the tip. Over the following several years, park officials extended the wall both north and south, even though they noticed that the waves dug deep depressions in front of the wall, necessitating the addition of new materials every “five to ten years.”<sup>344</sup> In 1970, however, officials also saw that the break wall, although successful in retaining the shoreline right behind it, caused erosion on the adjacent, unprotected sections of the shoreline. (The findings reflected those of the Army Corps of Engineers nearly 40 years before in a study of the New Jersey coastline that found that such protection only worked when it was continuous along a shoreline.)<sup>345</sup>

They persisted, this time by introducing gabion basket walls, a favourite approach on the privately owned shoreline nearby. The baskets are retaining walls that employ a wire cage-like structure filled with stone or gravel, or a similar material to deliver protection. These structures deteriorated quickly in the lake environment and, like the limestone break wall, caused erosion along the adjacent unprotected shoreline. In 1973, they were removed.<sup>346</sup>

As the twentieth century approached the twenty-first, researchers began to recognize that the efforts to protect shorelines with seawalls, groynes, and jetties had only contributed to the point’s erosion problems because they had blocked the natural circulation of sand in waters near the shore. As well-intentioned as their interventions had been, hardening the shoreline had prevented the release of aggregate into the water, so less aggregate was

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<sup>343</sup> E. Daigneault, *Erosion at Point Pelee National Park: A Case History* (Cornwall: Parks Canada, 1973), 3. Quoted in Battin and Nelson, *Man’s Impact*, 120.

<sup>344</sup> Battin and Nelson, *Man’s Impact*, 120–21.

<sup>345</sup> Mary-Louise Quinn, *The History of the Beach Erosion Board, U.S. Army, Corps of Engineers, 1930–63*, Miscellaneous Report No. 77-9 (Fort Belvoir, VA: U.S. Army, Corps of Engineers, Coastal Engineering Research Centre, August 1977), 14.

<sup>346</sup> Daigneault, *Erosion at Point Pelee National Park*. Quoted in Battin and Nelson, *Man’s Impact*, 122.

available to replenish unprotected areas, such as the beaches at Point Pelee. Research exploring the long-questioned relationship between sand sucker activity and shoreline activity contributed significantly to the new understanding of the human potential to affect shoreline processes.

Some of this research came early on, in the 1920s and 1930s, in recognition of the lack of data about sediment's circulation in shoreline waters. Many of these early surveys were carried out by Kindle, the Geological Survey of Canada sedimentologist.<sup>347</sup> Most surveys, however, would be performed by other researchers decades later. A persistent belief among government administrators and shoreline property owners that commercial dredging triggered shoreline erosion prompted the later research.

Through the years of experimentation with shoreline protection at Point Pelee, provincial officials kept a close eye on nearby sand sucker activity. Even though no one had proved a connection existed between commercial dredging and the chronic shoreline erosion at both Pelees, these officials had grown more accepting of the possibility. This shift in attitude is reflected at the provincial level in the 1947 effort to assert greater control over in-lake aggregate extraction by introducing a dredging limit of 250,000 cubic yards a year at the Point Pelee pumping grounds.

Officials developed the new quota in response to a deluge of requests to dredge there from American companies following World War II. Driving its introduction was the impression that these resources needed close management to protect them from depletion. In a memo to L.M. Frost, minister of mines, McFarland noted that while granting licences would add to the department's licence revenue, "the question immediately presents itself as to what effect this would have on the source supply." He estimated that sand sucker operators had already removed more than 1.6 million cubic yards of aggregate from Point Pelee. "How much is there left and how rapidly is the source of supply replenished?" he asked.<sup>348</sup>

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<sup>347</sup> Coakley, *A Study of Processes in Sediment Deposition*, 23. E.M. Kindle quoted in Stone, "A Geographical Survey of Pelee Island," 74.

<sup>348</sup> February 21, 1947, Dredging of Sand and Gravel, Point Pelee Area, Lake Erie Memo from McFarland to Frost, 2-3, AO Damage Monitoring Files.

The chronic erosion that took place at Point Pelee and Pelee Island, despite all the efforts to control it, might have contributed to McFarland's impression that lakebed aggregate supplies were diminishing. So too could property owners' continued belief that sand suckers were to blame for shoreline erosion despite experts attributing these losses to lake levels and storms. At the 1948 Lakeshore Erosion Conference in Toronto, attendees called for a complete ban of non-navigation-related commercial dredging throughout the Great Lakes system.<sup>349</sup>

Some officials began to use the erosion situations at Pelee Island and Point Pelee as a cautionary tale about the evils of sand sucking and as evidence of the need to view lake processes as holistic and vulnerable to cumulative human interventions. In 1965, for instance, Clarke, then chief of the fish and wildlife branch of the Ontario Department of Lands and Forests, cited the experience at Point Pelee in a memo to R.V. Scott, director of the Department of Mines' Mining Land Branch to explain why he objected to a dredging business being allowed to prospect for a pumping ground near Long Point in Lake Erie.<sup>350</sup>

Clarke's memo also expressed wariness not only of what the activity might do to the shoreline, but also of how it might affect the health of the aquatic environment, especially with the risks of interacting with other human-based activity. He noted that the area proposed for prospecting was heavily fished and a significant spawning area, implying that dredging would disrupt these biological processes. He was hardly the first to express such concern: 40 years earlier, a *Border Cities Star* article expressed alarm at the impact of commercial dredging on the "Pelee Reef," a noted spawning ground for sturgeon and "smaller fry."<sup>351</sup> Despite these long-running suspicions of the impact on spawning

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<sup>349</sup> Ibid., 2.

<sup>350</sup> November 17, 1965, Memo Re: National Sand and Material Company Limited from Department of Lands and Forests Fish and Wildlife Branch, Memo to M.R.V. Scott, Director, AO Damage Monitoring Files. "If extensive amounts of lake bottom material are removed from this proposed area, it may have some effect on the fishery but also on Long Point itself," Clarke wrote to R. V. Scott, director of the Department of Mines' mining land branch. "Dredging over the last hundred years appears to have altered currents and the shape of Point Peelee [sic] continuously and the total area of Point Peelee and adjacent marsh is only half of what it was previously."

<sup>351</sup> "Point Pelee," *Border Cities Star*, August 13, 1920. Quoted in Battin and Nelson, *Man's Impact*, 117–18.

grounds, no research existed to quantify the fish and wildlife head's concerns. (He also warned that the prospecting could negatively affect the gas wells that occupied the lakebed at Long Point and the service pipes that transported the gas to land.<sup>352</sup>)

Two other events would further fuel the belief that commercial dredging could produce a systemic change in lake and shoreline processes. One was the Lake Erie pollution crisis that erupted in the late 1950s and persisted into the 1970s. This crisis brought awareness to the widespread practice of dumping contaminated sediments dredged from harbours into the lake. The other occurred in 1970 when a Mersea Township landowner took National Sand and Gravel, the sole company that continued to actively dredge off the point, to court for dredging outside the area permitted by the company's licence. The landowner claimed the dredging was causing shoreline erosion.

These concerns fostered new research into lakebed dredging that adopted a holistic focus. For instance, in a 1977 study that looked at dredging in harbours at Port Stanley on Lake Erie and Bronte on Lake Ontario, P.G. Sly studied how the removal and open lake dumping of waterbed materials affected the chemistry of the waters involved and the duration of these effects. For the first time in Erie's Canadian waters, research affirmed interconnections (beyond a shared geography) between the waterbed and the waters above, and explored how dredging affected these relationships. Sly found "that total and reactive phosphorus levels increased rapidly in the receiving waters both at the removal site and at the open lake dumping site; similar increases in other nutrient elements and heavy metals were observed." Concentrations appeared to reduce within a few hours, he added.<sup>353</sup>

Meanwhile, at Point Pelee, J.P. Coakley sought to know whether dredging had produced systemic erosion along the point through studies of lakebed morphology, currents, and geology. In a 1976 study, he concluded that past dredging on the shoal south of the point did have an impact, as did the near-shore dredging of the more recent operations. His findings negated those of his predecessors in the 1920s and 1930s, who had adamantly

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<sup>352</sup> November 17, 1965, Department of Lands and Forests Fish and Wildlife Branch Memo.

<sup>353</sup> Sly, "A Report on Studies of the Effects of Dredging," vii.

maintained the dredging was too far away from shore to trigger erosion. Coakley's research further identified the shoal as a "temporary storage and transfer area for sediments" and, consequently, a key component in the Point Pelee littoral drift system (the system of near-shore currents that eroded and deposited aggregate). However, he added, dredging at the southern end of the shoal would have been unlikely to affect the point's shoreline.<sup>354</sup>

Coakley also determined that the materials comprising the point, previously assumed to have been formed solely from the accretion of materials eroded from elsewhere along the lake's shoreline, were "for the most part relict deposits which have been re-worked and re-distributed to their present configuration. In other words, the present form of Point Pelee is the result of erosion, rather than accretion as in the normal mode of spit formation."<sup>355</sup> His research therefore substantiated the idea that the supply of these materials was finite and in a centuries-long cycle of loss and decline; they were not infinite or possessing a state of balance between loss and replenishment if left alone, as Coleman had intimated.

Over the years, more geomorphological studies of the Point Pelee area took place. Some offered new insights into the area's geology, such as a 1997 finding that the ridged moraine to which it was believed that Point Pelee belonged was actually two ridges, and the ridge that contained Point Pelee was separate from the ridge that had produced the prized sand at Fishing Point.<sup>356</sup> However, these studies produced no definitive answer about the impact of commercial dredging on the shores.<sup>357</sup> Without data collected before sand sucker activities, researchers could not fully determine if a trench found in the

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<sup>354</sup> Coakley, *A Study of Processes in Sediment Deposition*, 6.

<sup>355</sup> Ibid., 4.

<sup>356</sup> Troy L. Holcombe et al., "Lakefloor Geomorphology of Western Lake Erie," *Journal of Great Lakes Research* 23, no. 2 (1997): 194.

<sup>357</sup> J.R. Shaw, "Coastal Response at Point Pelee—Lake Erie," Manuscript Report Series No. 4 (unpublished manuscript, Centre for Inland Waters, Fisheries and Environment Canada, 1978). Coakley, *A Study of Processes in Sediment Deposition*. Holcombe et al., "Lakefloor Geomorphology". W.F. Baird & Associates, *Sustainable Management Strategy*. Alex Smith and Chris Houser, "Perspectives on Great Lakes Coastal Management: A Case Study of the Point Pelee Foreland, Canada," *Ocean and Coastal Management*, 228 (2022): <https://doi.org/10.1016/j.ocecoaman.2022.106329>. These items provide examples.

former Cadwell sandbar off the tip of the point was linked to historic sand-mining activity.<sup>358</sup>

Many later studies called into question earlier studies' assumptions about which part, if any, of the point's shoreline was directly affected by sand-sucking activity. Researchers today continue to assess the extent of the impact; their estimates of the volume of material extracted range from 4 to 25 million cubic yards. One study published in 2022 concluded that "[w]hile it is believed that the sediment budgets of the eastern and western barriers were in a relative balance prior to European settlement, human altered littoral cell processes have contributed to the accelerated erosion of the foreland throughout the observational record."<sup>359</sup> Echoing the words of Coleman nearly a century earlier, the authors suggest a balance had existed between erosion and deposition in the region before all the human interventions; unlike Coleman, however, contemporary researchers are more willing to consider commercial dredging as one of the factors that interrupted this balance, along with the ongoing efforts to prevent shoreline loss by introducing jetties, seawalls and groynes.

Ending commercial dredging at Point Pelee would take political maneuvers, not scientific findings. In 1974, Leo Bernier, Ontario minister of mines, refused to renew dredging licences for the two companies that still operated there. He declared the activity as "an important causal factor in the erosion and resultant damages and destruction" of the point. The decision came after years of intense lobbying of the provincial government by not only environmental groups such as the Canadian Environmental Law Association, but also federal departments, local fishermen, and geologists. The era of aggregate mining along the vulnerable shores of Erie's western basin finally came to an end.

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<sup>358</sup> July 30, 1969, Sand and Gravel Removals Near Point Pelee Report from R.V. Scott to D.F. Douglass, Deputy Minister, 3, AO Damage Monitoring Files. December 14, 1945, Memo Re: Walpole Island from J.F. McFarland to Deputy Minister, 1, AO Damage Monitoring Files. In 1969, the Department of Mines knew that there was little-to-no movement below 6 metres in the lake, so a dug trench would not fill in over time. Years earlier, dredging at Walpole Island similarly demonstrated that the holes left from pumping sand had not filled in.

<sup>359</sup> Smith and Houser, "Perspectives on Great Lakes," 4–5.



**Figure 8 Point Pelee on April 14, 2023. Source: author.**

## Chapter 5: Conclusion

The walk from the visitor's centre to Point Pelee's sandspit, the southernmost point of Canada's mainland, takes half an hour if you keep up a good pace. Most of the trek involves an easy hike on a section of the main access road, which is closed to motor vehicle traffic during the warmer seasons. The volume of walkers and bikers travelling to and from the tip surprises me. Given the tiny national park's lengthy driving distance from urban centres—an hour from Windsor; two from London—I'm left wondering what motivated them to visit on this Friday evening in April 2023. Granted the temperature was unseasonably warm. Yet migratory birds on their way back from the south have long disappeared from the national park, and the Carolinian forest has yet to show its leaves, although spears of new plants have appeared, and trilliums are blooming.

Throughout the trek, signs and information panels appear on either side of the road. These offer descriptions of local flora and birds or feature helpful instructions about access to beaches and the paths that thread the point like the veins of a leaf. Arrival at the tip, however, brings with it a whole new set of notices. These signs alert not to pleasant diversions or intriguing sights but to danger ahead. Don't go into the waters at the sandspit, they warn. Rip currents—"powerful, narrow channels of fast-moving water"—can overwhelm swimmers and waders even when the water appears calm.<sup>360</sup>

Near these signs is a shingled rest area that doubles as the gateway to the tip. It contains more information panels, and one of these shows a map of the point in the present day. A fine line sketched to the right (east side) of the point's contour demarcates the point's size in the previous century. The portion that has disappeared equals the portion that remains.

The panels also explain that the spit seesaws in length. A strong wind blowing in the right direction will muster powerful waves that can shrink the spit to just a few metres within hours. A while later (the panel doesn't specify how much time) the spit re-emerges, sometimes dozens of metres in length. A short walk south along a sandy path finally brings the spit itself into my view: a stubby 20-metre comma curling a hair's breadth above glassy water. Beyond the spit to the southwest, Pelee Island's contour rises like a shadowy whale in the haze: humped to the east, sloping toward the waterline in the west.

Everything about the staging of the park's visitor experience characterizes the landform as a natural and national treasure whose existence is precarious and therefore in need of ongoing conservation. A trained and trimmed Carolinian forest arches like a magnificent deciduous cathedral roof over the narrow country road, building an impression of reverence for the road's end destination. The massiveness of the viewing station that towers over the point reflects not only the volume of human visitors in the spring and fall, but also the volume of the winged users travelling by the migratory flyway. Discussion on information panels about the point's length reminds visitors of just how far this thin strip of sand juts into the lake, while the signs warning of currents remind us of how large

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<sup>360</sup> "What Is a Rip Current?" National Ocean Service, National Oceanic and Atmospheric Administration, January 20, 2023, <https://oceanservice.noaa.gov/facts/ripcurrent.html>.

the point once was, how much land erosion stole away, and the dangers this process has produced for both the point and people alike. The rip-rap barrier that armors the tip's western shore bears witness to the point's vulnerability to the currents' erosive effects.

The opportunity to experience a prized shoreline wilderness in an increasingly developed southwestern Ontario landscape is surely what has attracted all these visitors to the park on this Friday evening in April. If they are here, like I am, to learn more about this landform's extraordinary contribution to the development of the modern infrastructure that surrounds the Great Lakes, they are certain to be disappointed. No signage tells the story of the sand and gravel the point supplied to road, sidewalk, and building construction in cities like Windsor, Detroit, Sandusky, and Cleveland, or to support vital transportation infrastructure such as the railroads and harbour piers that connected shoreline communities and fostered their economies. Nothing reminds us of how our needs shaped this point and its present-day difficulties with erosion or how, only a century ago, we believed that its greatest value was in the service it provided as a watery sand and gravel pit. Nothing here tells us how this landform contributed to the Canadian scientific quest to understand the lake processes of erosion and deposition or how, over a century, this quest fostered a shift in the vision of water bodies from one comprised of discrete parts to one of an interconnected ecology.

Many environmental historians caution against seeing parks as oases of nature untouched by human hands. The absence of these aspects of Point Pelee's history in public signage demonstrates what happens when this view of nature is adopted. The perspective is lopsided and misleading. People have inhabited the point for centuries, even thousands of years. To their credit, Point Pelee National Park staff acknowledge this long-term presence with plenty of information panels throughout the park, although it took nearly a century for the federal government to do so.<sup>361</sup>

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<sup>361</sup> Anne Jarvis, "Caldwell First Nation Announces First Parcel of Land for New Reserve in Leamington," *Windsor Star*, November 24, 2020, <https://windsorstar.com/news/local-news/caldwell-first-nations-announces-first-parcel-of-land-for-new-reserve-in-leamington>. For years, government officials did not recognize the Caldwell First Nation's claims to the area; indeed, it took the federal government 230 years to acknowledge the First Nation had never surrendered the point or Pelee Island to the British government. The Caldwell First Nation and the federal government settled this claim in 2010 when the Canadian government agreed to pay the First Nation \$105 million to acquire land for a reserve and in 2020 accorded

This institutional effort of inclusion at Point Pelee, however, stops short of debunking the related myth that rises from the belief in an untouched nature, which is that people somehow exist separately from the natural world and that the products of our imaginations and our hands—our cities, our machines—are also alien to the natural world.<sup>362</sup> At the park's sandspit, only its attributes as a natural attraction are discussed; the silence about the landform's long relationship to the urban centres nearby neatly excises the opportunity to highlight the point's brief but form-changing, role as an industrial aggregate pit.

Further, I doubt any western Lake Erie community recognizes the Point Pelee aggregate's contribution to its built environment. This oversight similarly excises these communities' opportunity to probe how their infrastructure's "first nature" forms their urban experience. Without such recognition, it also becomes impossible to recognize the ingeniousness of how sand sucker operators mimicked the natural processes of erosion and deposition by using water to remove aggregate from one location and apply it elsewhere.

Great Lakes sand suckers and the erosion they triggered came to symbolize the paradox of how new industrial practices both advanced and undermined efforts to establish the infrastructure needed to support explosive growth. While water-based aggregate mining became a source of highly valued materials to develop Great Lakes cities, this activity triggered environmental and political issues that threatened southwestern Ontario communities' ability to modernize. Political solutions affixed and stabilized jurisdictional boundaries. Conservation efforts similarly introduced hard barriers along the shoreline. Each of these activities achieved short-term success and engendered long-term problems. Each was prompted by a boundary in action, either conceptually by forcing decisions about governance of the waterbed or physically by transforming its appearance.

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the First Nation reserve status. These lands are also ancestral territory for many other Anishinaabeg First Nations located on reserves throughout the region.

<sup>362</sup> Our cities are certainly more complex than a termite mound (which is also made from sand), but are not urban centres based on an organization principle like seabird and ant colonies?

William Cronon argues that boundaries can obscure important understandings of human history, such as the long Indigenous presence in North America. The boundary of silence maintained at Point Pelee and the cities nearby similarly illustrates how divisions can create gaps in knowledge. Yet before we look beyond such boundaries to see what we can find, it is essential to consider the boundary itself and what insights its material and conceptual forms might yield. The curious application of boundaries in one of the strategies used to wrest away Walpole First Nation's decision-making powers over sand-sucking operations effectively illustrates this latter point.

In 1898, David Alexander Gordon, one of the inaugural directors of the Sydenham Glass Factory and also a founder of the Wallaceburg Sugar Company, argued that because the sand in this territory originated in other locations and was transported by the river, dredging "would in no way effect [sic] the property, as it is taken from the Flats, where it is washed up from the River."<sup>363</sup> His argument linked the ownership of sand to the location of erosion rather than its deposition and used the principle of property rights to introduce a boundary. Gordon used the argument to attack the Walpole First Nation's right to the sand on its lands: if the rights to the sand belonged with the property from which it was first eroded, these First Nation members could not possibly lay claim to the sand that washed up on their shore, he asserted.

But as Theodore Steinberg has pointed out, property claims like these raise more questions than answers and reveal the limits of property law to exert control over nature.<sup>364</sup> How, for example, was one supposed to know the sand's exact point of origin? Would it mean the First Nation could claim sand that ended up in Lake St. Clair or even farther downstream? Would past owners have a stronger claim to property than its present owners? Indian Affairs officials initially entertained the idea but ultimately rejected it, a fortunate decision not just for the community but also for Dominion

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<sup>363</sup> Fehr, "Who Has Traded Cash for Creation? 322–23.

<sup>364</sup> Theodore Steinberg, *Slide Mountain: Or the Folly of Owning Nature* (Berkeley, CA: University of California Press, 1996). See discussions of the Blackbird Bend along the Missouri River on pages 21–51 and Six Mile Lake in the Atchafalaya Basin on pages 52–81.

residents. If adopted, the precedent would have disrupted the common-law principles that governed property rights. It could have plunged the whole country into chaos.

Before returning this rather foolish proposal to the historical shelf, consider its acceptance of the idea that aggregate possesses considerable potential for mobility and plasticity when interacting with other processes, regardless of whether the other actor is a water current, sand sucker, or concrete truck.<sup>365</sup> Like the sand sucker operators who mined it, the aggregate that travelled along St. Clair rarely remained in one place. From the Lake Huron shoreline, it travelled to the Bkejwanong territory, where currents likely picked it up and removed it to Lake St. Clair, where yet other currents would eventually move it to the shores or into the Detroit River.

Aggregate imbued sand suckers with its mobility. Increasingly, as boats were explicitly designed to collect it, they were made to easily maneuver shallow and risky near-shore waters while still being able to bridge the Great Lakes' depths. Their nimbleness despite their size—their ability to work in shallow waters, negotiate difficult lake crossings and to deliver at docks both large and small—was quite unlike anything else in the Great Lake marine industry, and these qualities meant their operations were not constrained to conventional navigation channels. Indeed, they overcame all types of boundaries: international, property, shorelines. In turn, their boundary breaches set in motion physical and conceptual actions that transformed how natural scientists understood water bodies.

Sand suckers also triggered a new cycle of erosion and deposition that funnelled aggregate into the walls and floors of buildings like the Wallaceburg Sugar Factory, built in 1901. The closure of this operation in the early 1980s and the demolition of some of its buildings would free up the aggregate to become mobile again as rubble, disposed of at a dump or recycled into other construction, just as demolition freed the aggregate in the Edison Marysville power plant on the Michigan side of the St. Clair River.<sup>366</sup> In this way, aggregate lends its mobility to the elements it forms.

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<sup>365</sup> United Nations Environment Programme, *Sand and Sustainability*, 2. The report provides further discussion of sand's mobility on human and geological timescales.

<sup>366</sup> Some of this complex remains today and houses other businesses. Other buildings have come and gone, their rubble deposited at a dump or possibly (although it is unlikely) recycled into other construction.

Today, the growth in concrete recycling continues aggregate's journey. As a relatively new concept, the practice faces several operational barriers, such as how to manage the contaminated materials it might contain and establishing the steps to ensure it provides the structural strength for the project at hand. New innovations, including calcium carbonate concrete, whose development is inspired by the fossilization of some aquatic organisms, respond to these barriers.<sup>367</sup> Yet concrete recycling has yet to be widely adapted.<sup>368</sup> According to a 2017 report by the former Ontario environmental commissioner, only 7 per cent of the 164 million tonnes (80 million tons) of aggregate used in the province a year is recycled.<sup>369</sup> In some European countries, nearly 20 per cent of aggregate is recycled.<sup>370</sup>

Perhaps we should best remember the events at Point Pelee, Pelee Island, and along the St. Clair River for the environmental and political crises they generated and how these triggered the Ontario government's decision to extend a land-based management system into an aquatic environment. Nevertheless, it is vitally important to recognize that shoreline erosion and deposition modelled a new path of mobility for aggregate by inspiring an entirely new method of mining. The shoreline destabilization that sand sucker activity produced might have led southwestern Ontario's residents to vilify those

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<sup>367</sup> Peter Bentley, "Can We Recycle Concrete? *BBC Science Focus Magazine*, April 20, 2022, <https://www.sciencefocus.com/science/can-we-recycle-concrete/>. University of Tokyo, "A Concrete Solution," news release, October 8, 2021, [https://www.u-tokyo.ac.jp/focus/en/press/z0508\\_00190.html](https://www.u-tokyo.ac.jp/focus/en/press/z0508_00190.html).

<sup>368</sup> Dmytro Katerusha, "Barriers to the Use of Recycled Concrete from the Perspective of Executing Companies and Possible Solution Approaches—Case Study Germany and Switzerland," *Resources Policy*, 73 (2021) <https://doi.org/10.1016/j.resourpol.2021.102212> and Ramanpreet Sandhu, "Barriers to Construction, Renovation and Demolition Waste Management in Ontario," MA Thesis, McMaster University, 2015. Katerusha's study of 658 companies in Germany and Switzerland identified several barriers to concrete recycling in Germany, including lack of government support, low demand for the practice, uncertainty about government regulation and lack of experience. Some of these factors may well be at play in Canada. Sandhu notes that in Ontario, where provincial regulations require the construction industry to divert solid waste from landfills by recycling, waste concrete, if used, is most typically used for non-structural components, largely because there are few markets for the recycled material, contractors would have to store it until it was sold, and they would have to spend money on labour to sort the waste. Moreover, there is uncertainty over how recycling is reported, Sandhu claims. In Japan, on the other hand, Sandhu says that government regulation has successfully overcome some of these barriers by requiring the industry to add certain percentage of recycled concrete aggregate to regular aggregates.

<sup>369</sup> Dianne Saxe, *Good Choices, Bad Choices: Environmental Rights and Environmental Protection in Ontario* (Toronto: N.p., 2017), 172, 176, <https://www.auditor.on.ca/en/content/reporttopics/envreports/env17/Good-Choices-Bad-Choices.pdf>.

<sup>370</sup> Saxe, *Good Choices, Bad Choices*, 176.

who took up waterbed mining, but the aggregate that these boats transported built the cities and transportation infrastructure that became the backbone of our modern society. No wonder Bainbridge Colby, U.S. secretary of state, once called waterbed aggregate mining a “useful enterprise.”

Those are not the words we would use today, knowing as we now do the environmental consequences of commercial dredging, and it is easy to see modernism’s ambivalent legacy in the industry’s polarized contributions. With its links to infrastructure development and chronic erosion, sand sucking in Lake Erie’s western basin bears the hallmarks of this mixed legacy. Yet consider also the questions sand sucking in this particular location triggered about shoreline processes. These questions prompted a decades-long search into the dynamic quality of a natural barrier that changed the way we think of water body ecology and manage our relationship with these waters. They prompted some of Canada’s earliest efforts at establishing large-scale shoreline conservation. These efforts led to understandings and insights into lake ecology that we rely on today to help mitigate the impact of climate change on our Great Lakes shorelines. Useful, indeed.

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