COMMENTARY

ENVIRONMENTAL LAW

BY DAVID G. MANDELBAUM
AND KERRI L. BARSH
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MANDELBAUMD@GTLAW.COM; BARSHK@GTLAW.COM

Climate Adaptation: The Concrete Example of Floating Homes

Efforts to adapt to climate change provide business opportunity and therefore opportunity for lawyers. That apolitical message has been a recurring theme of these columns. Just recently, the press has reported on two examples of floating home projects motivated, at least in part, by demonstrating adaptation to sea-level rise. That provides us with an opportunity to be less theoretical about the breadth of legal issues that arise when clients seek to build adaptation projects.

David G. Mandelbaum and Kerri L. Barsh are the national co-chairs of the environmental practice group of Greenberg Traurig. Mandelbaum's principal office is in Philadelphia and Barsh's principal office is in Miami. Mandelbaum teaches "Oil and Gas Law" and "Environmental Litigation: Superfund" in rotation at Temple University's Beasley School of Law, and serves as vice chair of the Pennsylvania Statewide Water Resources Committee. Barsh serves on the National Stone, Sand and Gravel Association Council of Counsel.

Those in the Philadelphia area may have seen press reports of, or may have visited, WetLand, "an otherworldly houseboat moored on the Delaware River that's part interactive public art installation, part urban farm and dwelling place," according to the Philadelphia Fringe Arts Festival's website. Artist Mary Mattingly has installed what she intends to be a self-sustaining residence as part of the festival, off the grid for food, water and power. As the site says, "Imagine a near future when rivers and oceans begin to rise, when urbanites must embrace water as part of life."

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WetLand has received some press attention. But it is, after all, an art installation at an art festival, not a conventional development project.

Just north of Miami, Dutch Docklands seeks to develop 29 floating homes and a common "amenity island" on 38-acre Maule Lake, according to a Miami Herald article titled "Dutch Solution to Miami's Rising Seas? Floating Islands." (To make full disclosure, we are involved in that project.) Maule Lake is a rock mining pit that has filled with water and has a connection to the Intracoastal Waterway. The developer expects each unit to sell for about $12.5 million.

Sea-level rise is one consequence of climate change. Perhaps glaciers and ice sheets in Greenland or Antarctica will melt or beak off and fall into the sea. That would cause rather abrupt, catastrophic sea-level rise; melting of the ice at the North Pole does not affect the sea level because that ice is already floating and already displaces its weight. However, we are all certain that the average temperature of the oceans is increasing. Water, like most things, expands as it gets warmer. (This is different from the well-known feature of water that it also expands when it freezes, because the structure of ice is less dense than water.) As the water in the oceans warms up, the volume of the water in the oceans gets ever so slightly (in percentage terms) larger, and the tide reaches higher up the shore.

This would be less of a concern had we not built right up to the edge of the water. Not only do we have huge investments in vacation homes on barrier islands, we have major cities that go right down to the ocean; cities are often where harbors are. Less obviously, the Delaware River below Trenton is tidal; Philadelphia and points north and south along the river would be affected if the level of the river were to rise in response to the level of water in Delaware Bay.

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Note that because of changes to precipitation patterns, water levels in the Great Lakes are expected to fall, so the shoreline of Lake Erie can be expected to recede. Moreover, changing precipitation can be expected to make the major rivers in Pennsylvania more prone to flooding. These are not the same issues as sea-level rise.

So if your client proposes to develop floating structures to address changes in water levels, you can begin to think about the sorts of legal issues that will arise.

In order to build a facility of some sort, one must have some right to do so. Pennsylvania owns the beds of navigable waters, as in *Black v. American International*, 107 A. 737 (Pa. 1919). That is also true of formerly navigable filled land, as in *Delaware Avenue v. Department of Conservation and Natural Resources*, 997 A.2d 231 (Pa. Commw. Ct. 2010). The state takes the position that one cannot exclude the public from navigable waters, even if they are arguably owned privately, as in *Commonwealth v. Espy*, 4 Pa. D. & C. 5th 25 (Pa. Ct. Common Pleas, Huntingdon, 2007). However, one can own non-navigable waters, like a lake with no outlet, privately, as in *Mountain Properties v. Tyler Hill Realty*, 767 A.2d 1096 (Pa. Super. Ct. 2001).

Of course, one can float a vessel over navigable waters. If one characterizes a floating facility as a vessel, then it would have to be financed and insured as if it were a boat. It would also be regulated as a vessel and subject to in rem admiralty jurisdiction. The U.S. Supreme Court has held that an indefinitely moored houseboat is not a vessel, but instead a structure, for purposes of admiralty jurisdiction, in *Lozman v. City of Riviera Beach*, 133 S. Ct. 735 (2013).

Building a floating facility is subject to regulation, of course. It may require a permit under the Department of Environmental Protection's stream encroachment regulations. If the facility is attached to the bed of the water somehow, it may require a permit under Section 404 of the Clean Water Act, 33 U.S.C. § 1344. Even if it does not involve filling, the facility may require a permit as a work or structure in a navigable water under Section 10 of the federal Rivers and Harbors Act, 33 U.S.C. § 403. That permit requires consideration of the environmental impacts of the project. Among them may be the shadow of the facility on the bottom.

Local regulation poses an interesting issue. In a municipality with either a zoning ordinance or a subdivision and land development ordinance (SALDO) adopted under the Municipalities Planning Code, installation of a house or another sort of substantial facility would require local approval, and maybe multiple approvals. Many municipalities may not have provisions in the zoning ordinance governing land use on water or provisions in the SALDO governing land development on water. One implication of the Pennsylvania Supreme Court's plurality opinion in *Robinson Township v. Commonwealth*, 83 A.3d 901 (Pa. 2013), may be that a municipality would be constitutionally required to extend its regulatory scheme to water, assuming it has an ordinance at all.

These observations just skim the surface. The general point is that climate change motivates projects to adapt to the effects of change. Those projects raise legal issues. Those issues are the usual ones, but in a novel context. The legal work in climate change may not just be advising on the nuances of Clean Air Act greenhouse gas permitting after invalidation of the Tailoring Rule. It may be figuring out how to get title sufficient to support a mortgage on a floating artificial island. •