As communities along coastlines expand, conflicts between riparian property owners and shellfish aquaculture operations may also increase, resulting in a variety of legal and regulatory issues facing landowners and the aquaculture industry. This case study focuses on the overarching framework of the bottomland leasing and permitting system utilized in Virginia, as well as other considerations that should be taken into account when starting or expanding an aquaculture operation. The Virginia Coastal Policy Center (VCPC) interviewed multiple individuals to identify priority law and policy barriers affecting the shellfish aquaculture industry within Virginia. Interviewees included:
Based on these interviews, the VCPC determined that the best way to help individuals through the Virginia permitting process was to create an easy to use “how-to-guide.” The purpose of this guide is to identify the steps necessary to begin or expand an aquaculture operation in Virginia, and to answer common questions that aquaculturists often have during this process.

I. Background

Virginia is considered the “gold standard” for shellfish aquaculture.1 Since the first European colonists arrived in the early 1600s, shellfish aquaculture has contributed to Virginia’s economy.2 Shellfish aquaculture, in the broad sense, includes husbandry of shellfish on private grounds in Virginia, whether wild or hatchery-raised. It is important to note that in some cases, the term shellfish aquaculture is only referring to the newly emerging sector, which is utilizing only hatchery-produced products. An example of this is the Virginia Shellfish Aquaculture Situation and Outlook Report.3 This report summarizes survey responses from industry representatives that “gauge growth and inputs in Virginia’s hatchery-based shellfish aquaculture industry.”4

1. Laurie Schreiber, From Seed to Market: How one oyster farmer leverages a growing market: Going to market (Sept. 4, 2017) (quoting Julie Qiu, a blogger working with the Maine Sea Grant Program, Maine Aquaculture Association, and Maine Aquaculture Innovation Center).
2. Preserving Virginia’s Working Waterfronts, VA. DEPT OF ENVTL. QUALITY.
4. Id. at 3.
Based on the industry survey conducted in early 2018, hatchery-produced shellfish from Virginia’s clam and oyster industry was worth $53.4 million – $37.5 million for hard clams and $15.9 million for oysters.  

Other highlights of the report include identification of “Virginia [as] 1st on the East Coast of the U.S. for Eastern oyster production” and that “[o]ysters are the most rapidly developing sector of Virginia’s shellfish aquaculture.” Virginia’s bottom leasing program, combined with regulatory authority allowing structures 12 inches or less from the bottom on leased grounds without a permit, is extremely business friendly. The annual rent fee for leases is only $1.50 per acre. However, since shellfish can also be grown in the water column (more than 12 inches from the bottom) and there may be land-based elements of the operation, federal regulations, state permit requirements, and local ordinances play a large role in how aquaculturists must plan and structure their operations. New aquaculturists attempting to enter the industry or existing aquaculturists looking to change their operations could benefit from guidance on the necessary steps to accomplish their goals.

II. Development of the Flow Chart and One-Page Summaries

As discussions with VIMS, VMRC, and the Shellfish Growers of Virginia continued, the idea of a how-to guide expanded into the creation of an electronically available interactive flow chart that maps the necessary steps for establishing an aquaculture operation according to the operation’s purpose and structure. Users would work their way through a series of questions, such as: Would the shellfish be used for personal consumption or for commercial purposes? Would the shellfish be cultivated on bottomlands leased from the state? Would protective equipment, such as cages, be utilized? If so, would this equipment be placed on the bottomlands or within the water column?

The flow chart would be interactive in that at different decision points within the chart, hyperlinked PDFs of one-page summaries that expand on more complex topics would be available. The list below provides examples of one-page summary topics and the general content the summary would include.

5. Id.
6. Id.
1. **The statutory and regulatory framework for shellfish aquaculture in Virginia:**
   Summarize the General Assembly’s delegation of regulatory authority over state-owned bottomlands to VMRC, including enforcement responsibility.

2. **Finding a location for an aquaculture operation:**
   Explore two main subject areas, the Baylor Grounds and Private Grounds. For the Baylor Grounds, summarize the history behind the survey which established the boundaries for public oyster grounds in Virginia, how these boundaries may be modified, and how these public grounds may be used. For Private Grounds, discuss how private grounds may be leased, existing tools to assist with identification of available private grounds, and general environmental considerations – such as water quality, substrate conditions, submerged aquatic vegetation, and salinity.

3. **The different types of and how to obtain an oyster ground lease:**
   Discuss the different types of oyster ground leases – riparian and regular – and their general characteristics, such as eligibility to apply for each type of lease, associated application fees, required forms, and transferability.

4. **How to mark your lease area:**
   Identify the requirements for marking lease boundaries, including the type of markers and their required locations.

5. **The different types of and how to obtain an aquaculture permit:**
   Discuss the different situations where a state permit or the Joint Permit Application is required and the associated application fees, documentation, and public notice requirements. The National Sea Grant Law Center discusses this generally in its case study entitled *Shellfish Aquaculture Permitting under Nationwide Permit 48*.8

6. Local government regulations to take into account when planning an aquaculture operation:

Identify and briefly explain different local government regulations to consider with respect to aquaculture. Examples include business license requirements, zoning designations, and the Chesapeake Bay Preservation Act.

7. Required training for aquaculturists:

Explain the mandatory training requirements, including where the training is available, what it covers, how much it costs, and how often it must be done.

8. Required license and user fees:

Discuss mandatory license and user fees, including when they apply and their cost.

9. Mandatory harvest reporting:

Explain the mandatory harvest reporting requirement, including how often it must be completed, what information it must contain, and where to submit the report.

10. Bond requirements:

Detail the reasoning for bond requirements, when a bond is required, how much it costs, and how to obtain one.

11. Additional topics that arise during the development of the tool:

As the tool evolves and additional feedback is received, it may be necessary to include additional one-page summaries to provide clarification on additional topics.

III. Next Steps

VCPC will continue to coordinate with VIMS, VMRC, and the Shellfish Growers of Virginia to develop a flow chart that is electronically available and interactive. Initial steps are to finalize the decision points for inclusion in the flow chart and topic areas for the one-page summaries. Once the decision points are finalized, it may be necessary to coordinate with other partners.
skilled in graphic design and digital communication to develop a flow chart that is both visually pleasing and user friendly. As VCPC drafts the one-page summaries, VIMS and VMRC will provide expert review to ensure that the information contained within each summary is accurate and complete. Once the flow chart and one-page summaries are finished, a test of the tool would be beneficial to confirm its usability. For example, VCPC could work with individuals interested in aquaculture or with current aquaculturists to determine if they find the tool informative and easy to use. After taking feedback received from the test into account, the final step would be to determine where to post this tool and identify the party responsible for updating the tool in the future.