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AN ECONOMIC AND ENVIRONMENTAL OPPORTUNITY - TAPPING INTO BYPRODUCTS AND WASTE FROM MAINE'S MARINE INDUSTRY

A Report Commissioned by SEA Maine Examines the Potential for Maine's Seafood Residuals

PORTLAND, MAINE (September X, 2023)— The seafood sector value chain collectively supports thousands of jobs and billions of dollars of revenue and output as well as contributing to the prosperity of Maine's coastal communities. This production also generates an estimated 57 million pounds of residuals (or waste product) annually; about 25% of the total volume of seafood generated within Maine.

Today, most of these residuals are currently disposed of as waste, but more and more companies use residuals to create additional revenue streams, and there is opportunity for additional growth in this sector. A report commissioned by the Seafood Economic Accelerator for Maine (SEA Maine), an industry-led initiative that brings together leaders in Maine's commercial fishing, aquaculture, and the marine economy, examines how Maine companies are currently utilizing their residuals and ways to reduce waste and generate more revenue from residuals in the future.

The report examines current applications of residuals and their value as well as potential applications and value and breaks the use of residuals down into three categories: highest and "best" use, "medium" use, and "low" use. Medium to high-value opportunities can provide revenue streams for companies while low use typically avoids waste removal cost and can include on-site use. Medium-value opportunities include composting and biodigestion, fertilizer and plant stimulants, fishing bait, and animal feed products. Higher value products include pet

foods and treats, pest control products, health care and medical applications, textiles and bioplastics, nutritional products, and novel food ingredients.

In some instances, these residuals are already known to have significant value. For example, chitin from lobster shells is a known antibacterial, and numerous research projects are investigating its potential application for plastics and medical products. Lobster byproducts are currently used as a natural plant food; for example, Luke's Lobster launched an all natural lobster shell plant fertilizer that provides an organic source of nitrogen, calcium, potassium, and phosphorus for gardeners. "We've been investing in our residuals for several years now," said Luke Holden, founder and President of Luke's Lobster. "We started with a simple plant food product, but we continue to look for additional opportunities for higher value use of the residuals we produce."

The study includes an online map of estimated residuals to support spatial and logistical analysis for potential residuals processing opportunities. An analysis of how other jurisdictions leverage residuals demonstrates that it's possible to provide a 7% to 26% financial return on investment in Maine. One potential scenario could be a \$3-5 million investment in 2 to 3 facilities in Maine. Maine companies that generate residuals and currently pay to dispose or use them for low use (i.e. compost), could sell their residuals and capture a \$50 - \$100 return for every 1,000 lbs of supply.

"The way we use our marine resources is changing, and we now know there is value beyond what we're currently using for many species," said Heather Johnson, Commissioner of the Department of Economic and Community Development. "Identifying specific ways in which Maine can invest in seafood 'residuals' to leverage additional revenue, reduce waste, and bring innovative products to market helps with environmental sustainability, waste reduction, and economic return for Maine businesses."

One potential application of residuals is as a carbon sink. Bigelow Laboratory, in collaboration with several seaweed farms, is identifying ways to use seaweed production residuals to reduce carbon emissions and potentially develop technologies that will allow seaweed growers to enter the carbon sequestration market. This research involves studying different ways residuals (in this case kelp holdfasts) can be used as carbon sinks and/or for carbon sequestration. A related project is examining the potential for use of seaweed residuals as a feed for cows which causes them to burp less, reducing their methane emissions.

"This research is really exciting", said Nichole Price, Senior Research Scientist at Bigelow Laboratory. "Initial findings are promising, and show ways the seafood industry could potentially enter the carbon offset market in addition to creating a valuable feed product that helps reduce emissions from dairy farming."

The *Marine Resource Residuals in Maine* study was commissioned by the New Opportunities and Emerging Technologies subcommittee of SEA Maine. The subcommittee mandate is to identify opportunities to increase value-added products, strengthen infrastructure, and

maximize efficiencies across the seafood value-chain to grow commercialization, business development and jobs.

Two approaches for next steps include a sector-led approach and an expert-led approach. These approaches can be combined, recognizing there are both leaders within the Maine marine resource sector as well as experts around the world who can accelerate opportunities. Bringing them together will be ideal for pinpointing the best solutions, determining the business case for operators, and addressing gaps in expertise, time, or resources needed to develop the full potential of marine resource residuals. SEA Maine will launch a roadmap for the future of the marine sector soon outlining a path forward for the sector as a whole.

[To download the full Residuals Report please visit SEA Maine.](#)

[About SEA Maine](#)

SEA Maine, or the Seafood Economic Accelerator for Maine, is an industry-led initiative bringing together leaders in Maine's commercial fishing, aquaculture, seafood and marine economy. Funded by the U.S. Department of Commerce Economic Development Administration, with match funding from the Maine Technology Institute and FocusMaine, the statewide initiative is developing a roadmap and action plan for economic growth, market and workforce development, and greater resiliency in Maine's seafood economy.

The seafood that comes from Maine's coastal waters and the Gulf of Maine, and the working waterfront communities along our coast, support thousands of good paying jobs and already contribute to the state's \$8 billion tourism industry.

This fall, SEA Maine will launch its roadmap, the culmination of nearly three years of research and planning. With a focus on people, place and product the SEA Maine roadmap will outline a plan for the future of the marine economy in Maine and a gateway for additional funding to begin the implementation phase of the roadmaps recommendations.