

# EASTPORT BREAKWATER REPLACEMENT

THE REPLACEMENT OF A WATERFRONT STRUCTURE  
TO PROMOTE THE ECONOMIC GROWTH  
OF A RURAL COMMUNITY

## STATE OF MAINE

Eastport, ME (2<sup>ND</sup> CONGRESSIONAL DISTRICT)

Total Grant Funds Requested: **\$6,000,000**

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**HNTB**



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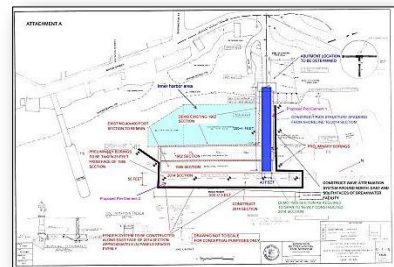


## PROJECT DESCRIPTION

This project will improve the port infrastructure of a rural economically distressed region by replacing a 50-year old breakwater in the heart of Downeast Maine. The Eastport Breakwater is a vital economic component to the local and regional community to which it serves, and its presence is essential to the economic recovery of this area. Its present configuration has developed in stages over the years, originally constructed in 1962 and later expanded in 1985 to provide over 400 linear feet of deep-water berthing for cruise ships, cargo vessels, fishing vessels, yachts, and U.S. Navy and U.S. Coast Guard vessels. The structure also protects the inner harbor and marina with its numerous fishing vessel, tugboats, Coast Guard rescue boats, and Customs and Border Patrol vessels, which has given the structure its name as a Breakwater. However, the condition of the Breakwater has deteriorated over the last 20 years and is now in a state of disrepair and reduced structural capacity. The steel sheet pile walls which comprise the perimeter of the Breakwater have corroded to the extent that holes are present in the underwater areas of the walls, and the fill material behind the walls is coming out. The loss of fill material reduces the capacity of the deck it supports. The deck was once rated for 1,000 lbs/sq.ft but is now limited to one-ton trucks. Structural steel ties that extend horizontally between the walls and provide stability are also failing. Many miscellaneous repairs have been carried out over the last several years, but the extent and severity of the deterioration is now beyond any repair program. The \$6 million request in TIGER Grant funds will be used to replace the deteriorated portions of the Breakwater and will increase the berthing space of the pier to enable larger vessels to come to Eastport. An additional \$3 million will be provided by the State while Eastport will provide \$2 million. Approximately 45% of the project funding will come from within the State of Maine.

### *STATEMENT OF WORK*

The Eastport Breakwater Replacement project will include the construction of two new pier sections and the demolition of two old deteriorated pier sections as shown in Figure 1. The two new pier sections will include a new 500-ft x 50-ft pier situated outboard of the existing 1985 section, while the existing 1962 access ramp will be replaced with a new section within the same footprint as the existing. An existing mooring dolphin to the south will serve as the terminus for a new wave screen which will wrap around the southern, eastern, and northern sides of the structure in order to protect the fishing vessels in the inner harbor area. A fender system will be installed on the eastern face of the pier.



*Figure 1 – Breakwater Replacement  
(click to enlarge)*

The new pier section will be designed in accordance with the latest American Association of State and Highway Officials (AASHTO) Load and Resistance Factor Design (LRFD) Specifications, and will be designed for a 100-year design life. More

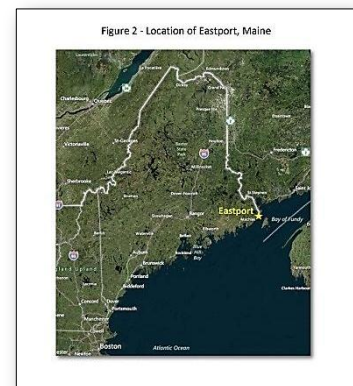


specifically, the pier will be constructed of pile bents comprised of concrete-filled steel pipe piles. Steel-reinforced concrete pile caps and concrete deck slab will be constructed to provide a live load capacity of 1,000 lbs/sq.ft. over the entire pier. As with all MaineDOT waterfront projects, the concrete deck will contain a 5,000 psi concrete mix design with corrosion inhibitor added to the mix, and the steel reinforcement will be epoxy-coated. Concrete cover will be a minimum of 3 inches. Mooring hardware will consist of bollards and bitts to secure large vessels up to 55,000 DWT and 800-ft in length, and will be spaced at regular intervals along the pier. The fender system will consist of individual fender panels with energy-absorbing capabilities to withstand vessel berthing forces. A new abutment will be constructed at the landside end of the facility where the pier connects to the downtown area along Water Street.

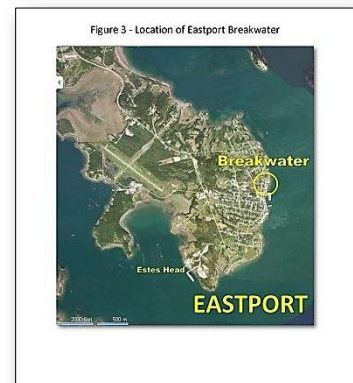
### *LOCATION OF WORK*

The Eastport Breakwater is located in Cobscook Bay at the easternmost edge of Maine and the Continental U.S. Its location lies near the mouth of the St. Croix River at the end of a long peninsula adjacent to some well-known destinations as Quoddy Head and Campobello Island. Eastport, is considered the most eastern point in the continental United States. Overall, Eastport is a very rural coastal community with its population of just over 1,300. It is dwarfed in size by the State's largest city, Portland, Maine, with its population of over 60,000 residents and nearly six hours away by car. Figure 2 illustrates the location of Eastport, Maine and Figure 3 illustrates the location of the Breakwater.

The Breakwater is situated in the heart of Eastport. It serves the local and regional community as a favorite gathering point for both tourism and trade. The locals use the Breakwater for many festive gatherings throughout the year, particularly in the months of May through September when the influx of tourist exponentially increases the population of Eastport. The U.S. Navy docks a large vessel at the Breakwater the week of July 4<sup>th</sup>, and the Pirate Festival held the first week of September features lobster boat races and a wide-variety of family-oriented activities. Each of these festivals attracts over 10,000 visitors to Eastport. Without the Breakwater, these events would essentially not exist due to the central focal point that the Breakwater provides and this tourism would be lost to Canada. Figure 4 illustrates the layout and location of the Breakwater structure in downtown Eastport.



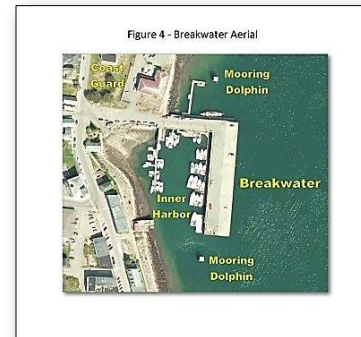
*Figure 2 – Location of Eastport, Maine  
(click to enlarge)*



*Figure 3 – Location of the Breakwater  
(click to enlarge)*



The Eastport Port Authority is the owner and operator of the Breakwater which serves as an economic asset for Downeast Maine and the Eastport community. While its pristine location along the coast of Maine is one of envy and attracts many tourists, Eastport's distance from populated areas such as Bangor (116 miles) and Portland 247 miles) places it along the outer rim of Maine's borders, which can often isolate Eastport from the rest of the state. As such, the location of Eastport and its distance from urban centers places it at an economic disadvantage in terms of its ability to interact with neighboring communities and weather economic downturns. Eastport is located in Washington County which is considered an economically distressed area and currently maintains an unemployment rate of 11.3%. Without the Breakwater and the activity it brings, economic recovery in this region would be even harder. Fortunately, the State of Maine is looking to strength its port infrastrucutr and provide assistnace to Eastport.



*Figure 4 – Eastport Breakwater  
(click to enlarge)*

Globally, few people realize that Eastport, Maine is ideally situated for worldwide commerce and trade shipping. Eastport is closer to European ports than other ports along the eastern seaboard, and is closer to the southeastern region of Brazil than New Orleans, Louisiana. Eastport's location globally is a tremendous asset to our county and is one that could be better utilized if its port infrastructure were improved upon. This topic will be elaborated upon later under *Economic Competitiveness*



*Lobster boat races are watched by thousands of visitors each year from along the Eastport Breakwater.*



*Eastport's 4<sup>th</sup> of July parade features a sailor's welcome parade through the streets of Eastport.*



*The U.S. Navy's USS Nitze makes a visit to the Eastport Breakwater as sailors prepare for their parade through the streets of Eastport, Maine.*





## PROJECT PARTIES

### *EASTPORT PORT AUTHORITY*

The mission of the Port of Eastport as a service oriented organization is to develop and manage property, and provide the services required to promote and accommodate transportation related commerce and maritime related activities, and to do so on a self-supporting basis by generating sufficient income to maintain the health and growth of the Port for the benefit of the public.

### *MAINE PORT AUTHORITY*

To improve the global competitiveness of Maine businesses, and in concert with public and private organizations, the Maine Port Authority stimulates commerce by developing marine and rail facilities, and other viable endeavors in a responsible fashion, for the intermodal movement of people and cargo in support of economic development. To this end, the Maine Port Authority, in concert with the Maine Department of Transportation and other public and private entities, makes targeted investments in, and maintains, port and other infrastructure. The Port Authority has responsibility for marketing these infrastructure assets to shippers, carriers, and the cruise shipping industry to the economic benefit of the state. In close cooperation with state and federal partners, the port authority also seeks to ensure safe and secure maritime commerce.

### *MAINEDOT*

The Maine Department of Transportation (MaineDOT, the Department) develops and maintains transportation facilities and services which contribute to the economic growth of the State of Maine and the well-being of its people. The Department plans for future transportation needs and assists in the development, operation, and maintenance of services and facilities, while promoting transportation safety. Key components of the transportation network are a highway system developed to promote safety, personal mobility, economic considerations, community values, and environmental conservation; port and water transportation facilities that support the development of coastal resources; freight and passenger rail facilities to serve commerce and provide transportation alternatives; transit services for intercity travel, and for elderly and disabled populations; and an aviation infrastructure developed with the assistance of the department.

MaineDOT is experienced in grant management and contract procurement and has established criteria including Equal Opportunity requirements. It has implemented an annual race-neutral DBE goal for all federally assisted projects pursuant to Federal guidelines. The department also administers all federal or other monies intended for transportation uses.



## GRANT FUNDS & SOURCES

This project is considered one of paramount importance to Eastport and the State of Maine, and is soon to be underway with design activities, permitting, and exploratory studies. As such, the MaineDOT has already allocated funding for the design phase of this project, but is seeking assistance for the construction phase of this project, which is expected to commence near the end of 2013. The MaineDOT is currently allocating up to \$3 million for the Eastport Breakwater Replacement project. This funding is coming from the MaineDOT's multimodal transportation fund, and is allocated according to project needs.

The importance of this project has been deemed of such critical nature that Eastport recognizes the need to contribute local funds to secure the project's undertaking. There will also be a \$2 million match from the Eastport Port Authority. This money will come from local port revenue generated from the Breakwater, inner harbor marina, and Estes Head terminal. The greater Eastport community sees the benefit of this project and believes that the success of the Breakwater replacement will ensure the community's longevity and way of life for years to come.

The remaining funds, approximately \$6 million, will come from FY 2013 TIGER Grant. This money will be used for construction activities to commence in January 2014. Construction activities will include replacement of the original Breakwater sections as well as demolition of the existing 1962 section and access ramp. By seeking \$6 million in grant money, the State of Maine and greater Eastport community are planning to pay for approximately 45% of the project cost. With construction commencement set for January 2014 and project completion scheduled for September 2015, the MaineDOT is confident that all funds will be appropriated by September 2014.





## LONG TERM OUTCOMES

This project proposes a significant improvement to the Eastport waterfront in terms of longevity to the Breakwater and future protection to the inner harbor. There are numerous entities that will benefit in the long-term from the replacement of the Eastport Breakwater project, including the merchant mariners, commercial fisherman, aquaculture industry, tugboat companies, cruise ship industry, U.S. Coast Guard, and U.S. Customs and Border Patrol. Included in this list are the local entities engaged in emerging markets such as terrified wood pellets, live cattle transport, and kraft pulp exports. Essentially, the greater Eastport community's livelihood and future depends upon this structure. By investing in the Eastport Breakwater, the State of Maine and the country is preserving its working waterfront culture, and exemplifies our commitment to our port infrastructure.

The State of Maine has invested significantly in Eastport over the last 15 years, from the late 1990's with its \$15 million investment in the industrial pier at Estes Head on the west side of Eastport, and subsequent funding for conveyor equipment in 2009. The table below illustrates Maine's commitment to its port infrastructure, and illustrates how the FY 2013 TIGER Grant request compares to the investments that have already been made to the State's waterfront port facilities. Each major investment has been carefully managed by the State of Maine and has resulted in revenue growth at each facility and with every injection of funds.

**Summary of Existing and Proposed Port Funding in Maine (1997 to present)**

Port Facility	Date of Funding	Summary of Funding			TIGER FY 2013 REQUEST
		State Bonds & Private Partners	FHWA	TIGER FY 2009	
<b>Port of Portland</b>	1997-2008	\$ 16,202,829	\$ 2,941,786	\$0	
	2009	\$ 720,150	\$ 0	\$ 5,000,000	
	<b>TOTALS:</b>	<b>\$ 16,922,979</b>	<b>\$ 2,941,786</b>	<b>\$5,000,000</b>	<b>\$ 0</b>
<b>Port of Searsport</b>	1997-2008	\$ 26,162,188	\$ 3,717,887	\$0	
	2009	\$ 1,750,000	\$ 0	\$7,000,000	
	<b>TOTALS:</b>	<b>\$27,912,188</b>	<b>\$ 3,717,887</b>	<b>\$ 7,000,000</b>	<b>\$ 0</b>
<b>Port of Eastport</b>	1997-2008	\$ 14,906,498	\$ 0	\$ 0	
	2009	\$ 4,500,000	\$ 0	\$ 2,000,000	
	<b>TOTALS:</b>	<b>\$ 19,406,498</b>	<b>\$ 0</b>	<b>\$ 2,000,000</b>	<b>\$ 6,000,000</b>
<b>TOTALS</b>		<b>\$ 64,241,665</b>	<b>\$ 6,659,673</b>	<b>\$ 14,000,000</b>	<b>\$ 6,000,000</b>

Overall, Maine's port infrastructure is generally in fair condition due to the investments made by the State, Cities, Federal government and various private entities; and Maine ports have experienced collective annual growth over the last 20 years. Although the overall trend line illustrates one of growth across the board, the individual ports have witnessed their share of





peaks and valleys throughout the years due to single-source revenues and limited infrastructure. While the Eastport community has been able to weather the storm in the past, the rapid deterioration of the Breakwater could undermine the backbone of this area. As a region which takes great pride in its ability to chart its own course and create its own future, Eastport is in need of assistance to replace the Breakwater sooner than expected. The Port of Eastport sees the replacement of its Breakwater as an opportunity to strengthen its infrastructure and ensure the long-term safety of its users. By not only replacing but also enlarging the Breakwater, Eastport is looking to attract new customers and exploit its natural resources and geographical location.

### *STATE OF GOOD REPAIR*

The Port of Eastport has a strong maritime history and its location is naturally endowed as the country's easternmost port with the deepest natural seaport in the Continental United States and all of Canada. With one of the highest tidal ranges in the country, and a 64-ft natural channel (MLW), the strong flow of water keeps the navigational channel clear of siltation and is essentially maintenance free for deep-draft vessels and overseas transportation. Eastport can naturally attract some of the largest vessels afloat such as U.S. Navy ships, cruise ships, and large cargo vessels, without the need for maintenance dredging or channel widening.

The original Eastport Breakwater was built in 1962 by the Army Corps of Engineers to take advantage of these physical attributes, and was later enlarged in 1985 to include additional infrastructure in light of the growing use of the Breakwater as a local attraction and berthing facility. The original Breakwater sections still remain; however, the overall condition of those original areas has worsened over the last several years and the feasibility of continued repairs would be economical.

More specifically, two isolated areas of the 1962 structure failed in the last 20 years: the southwest corner of the Breakwater failed in 1994, and a second failure occurred in 2004 at the northwest corner of the Breakwater. In 2013, a dive inspection was performed around the entire perimeter of the 1962 Breakwater sections and revealed numerous large holes in the steel sheet piling. The north face is noted to have the worse section loss. As with all steel corrosion on waterfront structures, the rate of deterioration has increased exponentially since it was first observed in 1994 (see [Repair Options Report](#)), and now the extent of the deterioration prevents any economical means of repairs from occurring.



*The steel sheet piles contain severe deterioration both above and below the water line. Note large holes in the steel sheet pile and significant loss of fill from behind the steel sheet piles.*



In addition, the deteriorated condition has resulted in load restrictions, limiting vehicle access to trucks less than one-ton. The northerly edge of the breakwater has also been restricted to one-lane traffic. The deterioration of the steel sheet pile walls and the failed horizontal steel tie-rods which secure the outer sheets together have created an immediate safety concern for personnel.

Recognizing that this structure is vital to Eastport and its regional economy, the State of Maine has undertaken the Breakwater Replacement project in order to strengthen the State's infrastructure and ensure its vitality through the twenty-first century. The structure will be constructed for a design-life of 100 years by using innovative materials and following the technical guidelines prescribed by AASHTO and other publications to ensure the long-term durability of this structure. The State of Maine considers the replacement of the Breakwater as an opportunity to increase not only the longevity of this structure but also its functionality by increasing the overall size of the Breakwater to accommodate larger vessels than ever before. The length of the Breakwater will be increased from 400 feet to 500 ft which will provide greater berthing space for U.S. Navy ships, cruise ships, and large cargo vessels. Also, the Breakwater will continue to serve as a figurative means of separation between the downtown charm of the local community and the industrial section of Eastport at Estes Head.

By replacing the Breakwater structure, we are ensuring the safe berthing facility for the U.S. Navy, U.S. Coast Guard, and U.S. Customs and Border Patrol. These entities need the Breakwater to safely dock their vessels and perform their mission. The U.S. Coast Guard Station, for example, consists of a work crew of eight personnel and two search and rescue boats which serve a 100-mile stretch of coastline. The next closest Coast Guard Station is over 65 miles away in Jonesport, Maine. As Captain Gilda of the U.S. Coast Guard states in his letter of support:

*"In an operating environment characterized by strong currents, high tidal range, and diverse bathymetry, the Breakwater affords superb protection for Station Eastport's 45' RB-M and 25' Response Boat -Small (RB-S). Moreover, these moorings provide central positioning between key - and often dangerous - waterways. With the Coast Guard station's main building located at the entrance to the Breakwater, both boats are only a moment's walk for duty crews, further optimizing launch times for critical search and rescue and maritime law enforcement." - Captain Brian Gilda, United States Coast Guard.*

Without the presence of the Eastport Breakwater, the current arrival of merchant vessels would be forced to use the industrialized Estes Head waterfront structure on the backside of the Eastport peninsula. Use of the Estes Head industrial facility has been solely dedicated to the marine shipping industry including aggregates, wood pulp, and wind-turbine components. While the intent of the port is to maintain the industrial nature of the Estes Head facility, it is clear that the utilization of the waterfront structure would need to change to accommodate other vessels, some of which would force the mixture of recreation with merchant marine logistics. There is concern that such a mixed-use facility would be an unsafe condition, and the industrial component of Eastport could decline if not allowed to function as designed.



## ECONOMIC COMPETITIVENESS

Eastport stands to become more economically competitive on a global scale with the acquisition of TIGER Grant funds for the Eastport Breakwater Replacement, since most of the maritime activity here in the state is competing with St. John, New Brunswick and Halifax, Nova Scotia and other Canadian ports. Eastport's Breakwater facility serves a wide variety of functions and its replacement with a larger structure will make it more attractive to international customers and more efficient in terms of cross-dock operations. Large cargo vessels will find the longer docking space to be spacious and more accommodating, while cruise ships will find greater ease of accessibility to their loading doors along the side of their hulls. Cargo vessels will consider the Breakwater a viable choice to transport its goods, if necessary, when the Estes Head industrial pier is in use.

As previously mentioned, another factor to the overall economic competitiveness of Eastport is the fact that Eastport maintains not only the Breakwater structure, but it also maintains an industrial pier on the other side of its peninsula at Estes Head. However, this industrial pier is strictly for cargo vessels with bulk and break-bulk cargo, and the mixed use of such a facility would be unsafe and impractical. The industrial pier currently transports 400,000 tons of wood products from a regional customer, and this number is increasing year-over-year now that additional conveyor equipment and storage space was recently added. Without the Breakwater pier in downtown Eastport, much of the over-spill maritime activity would be forced to either coexist at the industrial pier, or would be lost to Canadian ports. This scenario could jeopardize the economic revenue stream at the industrial pier, if it must succumb to smaller revenue-generating merchants. For this reason, the Breakwater structure is of great importance to not only Eastport but to our country's economic competitiveness. More information will be provided in the Benefits-Cost Analysis section of this application.

In a similar manner, Eastport stands to improve the country's economic competitiveness due to its proximity to both Europe and Brazil. This is an important aspect of the country's transportation equation; that Eastport is closer to European ports than other ports along the eastern seaboard. Eastport is approximately 400 miles closer to Europe than New York harbor, and 570 miles closer than Baltimore harbor. This differential can eliminate upwards of two to four days off transatlantic transportation times which would be a substantial savings to shipping companies and ultimately to consumers. Similarly, Eastport is closer to the southeastern region of Brazil (where the country's steel manufacturing and wind turbine components come from) than New Orleans, Louisiana. Eastport is approximately 193 miles closer to southeastern Brazil than New Orleans which could be a substantial savings in the transport of these components. See Figure 5 for a geographical summary of these distances.

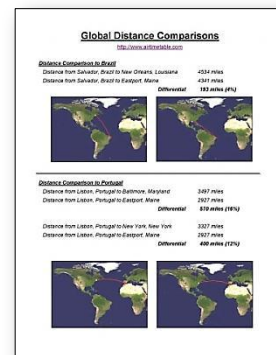


Figure 5 - Global Distances  
(click to enlarge)



While Eastport is situated in an ideal location geographically, this remote region of the state is greatly affected by the economic tides of its limited markets. Eastport, and its homestead Washington County, is a small community and its vitality depends greatly on its waterfront success. The transportation of goods through its port has seen its ups and downs over the last few years, including the unsteady operations of the Domtar mill from 2009 through 2010. The mill has provided the port with its primary export material, kraft pulp, for over 28 years, yet its closing and reopening in 2010 raised concerns within the community that Eastport was not diversified enough to sustain itself economically. The closing of the mill and the ripple effect through the region hit this economically distressed area hard, and its rejuvenation has been a difficult one to develop and implement. While the mill's reopening is positive for the region, it is uncertain whether global pulp demand is fully rebounding. Certainly, the shorter haul route to Eastport rather than St. John's Canada is a factor in maintaining price competitiveness in this global market for kraft pulp. Eastport is now looking to bolster its infrastructure in order to prevent another economic downturn. While the economic difficulties still remain, the perseverance of the people in this region remains strong, and the community has looked for additional revenue streams to bring economic relief. A comprehensive plan has been established to create long-term growth for this region. The Eastport waterfront is now marketed as a primary resource for the shipping industry.

Maine's geographic location and size can be both a benefit and drawback to the State's economy depending upon where one lives. Extending over 35,000 sq. miles in area, Maine is the largest of the New England States and comprises nearly half of New England alone. Yet this size does not necessarily equate to economic strengths above its neighbors, rather it illustrates the potential for disparity between the regions in terms of economic development and employment rates as one extends further from the populated and developed southern region toward the eastern end of Maine. It is interesting to note that the distance from Portland, ME to Eastport, ME is nearly the same as the distance between Portland, ME and Hartford, CT. Moreover, Maine has the lowest density population of any other state east of the Mississippi River.

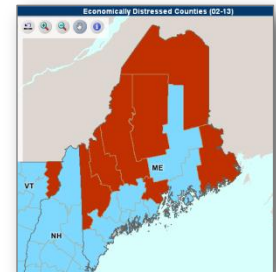


Figure 6 - Maine's Economically Distressed Areas (click to enlarge)

As an example, in April 2013 the unemployment rate for Maine was 7.1% while the national average was 7.5%. By comparison, the local unemployment rate for the Eastport region (Washington County) in April 2013 was 11.3% with approximately 1,584 individuals unemployed out of 14,060. Figure 6 identifies Eastport as an Economically Distressed Area according to the U.S. DOT Federal Highway Administration's HEPGIS Maps. When the state and the nation experience recoveries, Eastport lags behind, as illustrated in Figure 7 and Figure 8.

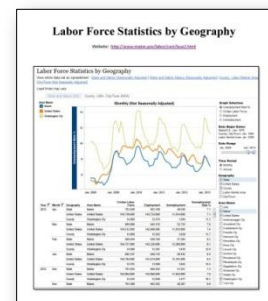


Figure 7 - Labor Force Statistics (click to enlarge)





There is also a great potential to create jobs and grow the greater Eastport regional economy. Through cruise ship tourism and cargo handling at the Eastport Breakwater, there is a chance to increase the number of waterfront jobs through investment in the Breakwater. This project will create jobs both in terms of immediate employment during construction as well as in terms of sustained employment once the Breakwater is replaced. It is estimated that approximately 20 construction jobs will be created over the course of the next one and a half years as part of completing this project. This number includes design professionals and construction workers throughout the course of the project. As will be later shown in the Benefit-Cost Analysis section of this application, this project is likely to result in 3,108 job-years and over \$38 million in income wages between 2014 and 2040 once the Breakwater is replaced. This estimate is based on historical data and economic trends of the cruise ship and cargo transport industries, and correlate with the number of tons of goods and touring passengers with the number of local jobs which support those economies.

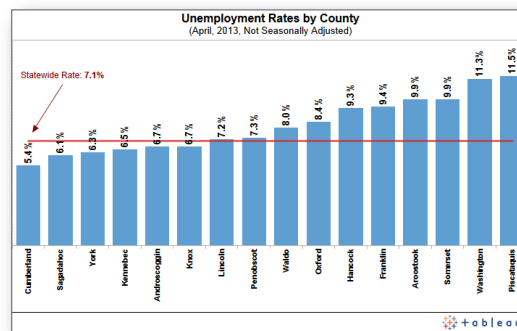


Figure 8 - Maine's Unemployment Rates  
(click to enlarge)

See the following website for unemployment rates:  
<http://www.maine.gov/labor/cwri/news/release.html>

### LIVABILITY

The Eastport Breakwater Replacement project will enhance the regional landscape by maintaining a multipurpose waterfront structure for this vibrant rural community. Eastport's downtown streets are walkable and attract tourist from around the country during annual festivals, navy visits, parades, and lobster boat races, all centered around the Breakwater. By replacing this deteriorated structure, we are sustaining our small town way of life and providing a revenue generating facility that also attracts tourists through our community festivals and cruise ship passengers. The Eastport Breakwater is the backbone of this region and creates the unique charm and represents the idyllic characteristics of a coastal Maine community.



U.S. Navy sailors and tourist enjoying the 4<sup>th</sup> of July festival along the Breakwater and in the streets of Eastport.





It is hard to imagine Eastport without its Breakwater structure. Not only would the tourism and local flair diminish, but the heart of Eastport's fishing and aquacultural industry would become dispersed without the presence of a waterfront structure to protect the fishing vessels in the inner harbor. Tourism would be lost to Canadian provinces, as well as the fisherman with salmon pens who will relocate to areas with protected marinas or inner harbors. The Breakwater's presence provides a durable wave screen against ocean wind and waves and allows the fisherman to keep their boats in the downtown area close to their homes and livelihood. The local restaurants such as the Pickled Herring, the Eastport Chowder House, and the Happy Crab all advertise and rely on the local catch of the day to attract patrons, especially during the summer months when most of its revenue is generated from tourism. Without the local fishing industry adding to the regional economy, Eastport would not be the coastal community it is today.

*"All Quoddy Bay Lobster shareholders own lobster boats and fish independently from each other. They, along with other fishermen, each supply Quoddy Bay Lobster with their landings. Our business depends on these landings to continue doing business. Without the Eastport Breakwater to moor these boats, our business could substantially lose funds to operate due to loss of fishermen to other dealers in outside locations, where their boats can be moored and easily accessed." - Brent Griffin, President, Quoddy Bay Lobster Co.*

### ENVIRONMENTAL SUSTAINABILITY

This project will restore additional seafloor area by removing the existing Breakwater, which is a gravel-filled structure surrounded by steel sheet piles, and adding a new Breakwater section supported by steel pipe piles. The restored square foot area of seafloor will be approximately 25,000 square feet, versus the area of the new steel pipe pile foundation which is approximately 2,000 square feet.





## *SAFETY*

Given the poor condition of the Eastport Breakwater and the fact that this structure has recently been downgraded in terms of its structural load-carry capacity, there is clearly a safety issue that needs to be addressed by replacing this structure. The replacement of the Breakwater will not only improve the load-carrying capacity of the facility back to 1,000 lbs/sq.ft. and enable the workers to perform their work, but will also continue to provide a safe-haven for fishing vessels in the inner harbor area. Without the protection of the Breakwater or a wave screen, the fishing vessels, tugboats, U.S. Coast Guard rescue boats, and the U.S. Customs & Border Patrol boats moored in the inner harbor could be damaged by ocean wind and waves, or the fishermen could be injured within their own vessels. In either case, the presence of the Breakwater provides protection for these small boats and berthing space for larger ships.

## *PROJECT READINESS*

The State of Maine has been planning this project for several years and is currently reviewing design engineering proposals and will soon be underway with the design phase of the project. Over the last 20 years, the State of Maine has retained private consultants to provide independent review and evaluation of its Eastport Breakwater. From structural engineers to dive teams, the Eastport Breakwater has been evaluated for not only repairs but also for replacement by some of the region's most notable marine engineering firms. The State of Maine maintains a list of local and regional pre-qualified marine engineering firms that have successfully evaluated and designed marine waterfront structures throughout the coastal regions of Maine. The Eastport Breakwater Replacement project is technically feasible, has some dedicated financial backing by the State, and is scheduled to be completed by September 2015. The State of Maine is confident that this project can have all funds appropriated by September 2014 in accordance with the FY 2013 TIGER Grant requirements.

**TECHNICAL FEASIBILITY:** Although this project is currently underway, there are still several challenges that must be overcome when designing and constructing a waterfront structure. Of particular importance is the site location, the water depths, and the composition of the seafloor. In Eastport, the water depths are typically between 40 ft to 70 ft, extending deeper as one moves off shore, and the seafloor is comprised of sand and gravel overlaying a bedrock of basalt and metamorphic strata. With these characteristics, and the fact that tidal variations can reach upwards of 25 ft with tidal currents as high as 6 knots, the design for ocean wind, wave, and current forces becomes critical to the successful design of the structure.

Most important is the pile foundation. The State of Maine has already performed a preliminary series of subsurface borings in an effort to better understand the foundation requirements and get a jump start on the project's aggressive schedule (see [Boring Logs](#)). Given the varying thickness of the sand and gravel layers, there is little overburden material in some areas to allow standard pile driving to occur. In most cases, the steel pipe piles will require rock-



sockets to firmly embed the piles into the bedrock and ensure their lateral stability against horizontal wind, wave, currents, and berthing forces. Once secured, the piles will be filled with concrete to provide additional strength and will then be interconnected with steel-reinforced concrete pile caps to create a series of pile rows, or bents. Bents provide lateral rigidity as a frame-like structure. Each bent will contain six to seven steel pipe piles. Finally, a steel-reinforced concrete deck will be placed atop the pile caps in order to lock the entire assembly together and provide a 1,000 lb/sq.ft. deck surface. All steel reinforcement will be epoxy coated for durability and longevity. This type of waterfront structure is common throughout the country and is certainly technically feasible here in Eastport.

**FINANCIAL FEASIBILITY:** This project has limited financial backing by the MaineDOT and the Eastport Port Authority. Because the design phase of this project is soon to be underway, the MaineDOT has allocated funds for only the design phase of this project at this point in time. The construction funds have not yet been secured. The State of Maine can allocate up to \$3 million toward this project, while the Eastport Port Authority can allocate up to \$2 million. The State of Maine has a very good record of overseeing the financial responsibility of grant money as exemplified through its FY 2009 grant award. Figure 9 is a preliminary outline of the Project Budget.

Project Line Description	QTY	Units	Unit Price	Cost	ESTIMATED COST	ESTIMATED COST	ESTIMATED COST	ESTIMATED COST
<b>Design</b>								
Design Services	1	1	\$100,000.00	\$100,000.00	\$100,000.00	\$100,000.00	\$100,000.00	\$100,000.00
Design Services - Subtotal	1	1	\$100,000.00	\$100,000.00	\$100,000.00	\$100,000.00	\$100,000.00	\$100,000.00
<b>Construction</b>								
Construction Services	1	1	\$2,000,000.00	\$2,000,000.00	\$2,000,000.00	\$2,000,000.00	\$2,000,000.00	\$2,000,000.00
Construction Services - Subtotal	1	1	\$2,000,000.00	\$2,000,000.00	\$2,000,000.00	\$2,000,000.00	\$2,000,000.00	\$2,000,000.00
<b>Materials</b>								
Materials	1	1	\$1,000,000.00	\$1,000,000.00	\$1,000,000.00	\$1,000,000.00	\$1,000,000.00	\$1,000,000.00
Materials - Subtotal	1	1	\$1,000,000.00	\$1,000,000.00	\$1,000,000.00	\$1,000,000.00	\$1,000,000.00	\$1,000,000.00
<b>Other</b>								
Other	1	1	\$500,000.00	\$500,000.00	\$500,000.00	\$500,000.00	\$500,000.00	\$500,000.00
Other - Subtotal	1	1	\$500,000.00	\$500,000.00	\$500,000.00	\$500,000.00	\$500,000.00	\$500,000.00
<b>Total</b>								
Total	4	4	\$4,500,000.00	\$4,500,000.00	\$4,500,000.00	\$4,500,000.00	\$4,500,000.00	\$4,500,000.00

Figure 9 - Project Budget  
(click to enlarge)

**SCHEDULE:** This project will be completed in its entirety by September 2015 in accordance with the Project Schedule shown in Figure 10. The Eastport Breakwater design and permitting tasks will be underway at the time of this grant application submission. Six months of design work and coordination will be required to complete the construction documents. Thereafter, the State will advertise the project and secure a contractor by January 2014. Local approvals and State permits for this project are either in progress or can be readily obtained.

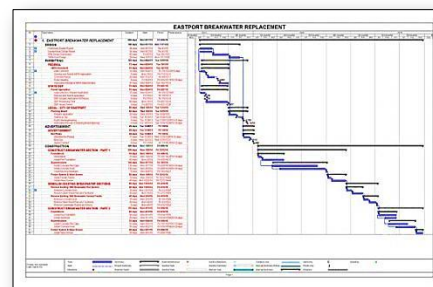


Figure 10 - Project Schedule  
(click to enlarge)

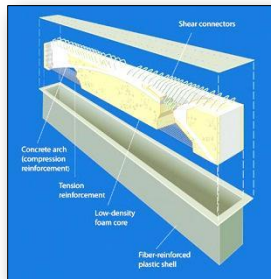
**RISKS & MITIGATION STRATEGIES:** The MaineDOT alongside the Eastport Port Authority understands that with every project comes risks and potential pitfalls which could impede progress or create financial shortages. For this reason, the MaineDOT and the Eastport Port Authority will collaborate to provide full oversight on this project by establishing project milestones upon notice of award for monitoring progress and ensuring a full completion of the project by September 2015. Periodic reports will be provided to the federal agency issuing funding.



## INNOVATION

Waterfront projects such as the Eastport Breakwater Replacement are good examples of how innovative materials can increase the durability and longevity of a waterfront structure. Materials such as composite beams, glass fiber reinforcement, low-friction plastics, and plastic sheet piles are just some of the examples where plastics and composites can pose a great benefit to a waterfront structure. The following is a list of examples of these materials in use or currently under consideration by the MaineDOT.

The MaineDOT has recently used the Hillman Composite Beam technology for a bridge replacement structure in Boothbay Harbor, Maine. The deck of this 540 ft long bridge was constructed of composite beams made of a T-shaped fiberglass shell with high-strength steel used in the tension section and a concrete arch in the compression section. Beams were fabricated in Brunswick, Maine to lengths of 70 ft, and were transported to the site as fiberglass shells. Concrete fill was later placed within the shells once the members were installed atop the pile caps. This innovative method of construction and materials has been endorsed by the State of Maine, which now seeks to use this methodology on waterfront projects where corrosion can occur. While concrete members by themselves can contain corrosion inhibitors and epoxy coated bars, the State of Maine encourages its designers to use innovative materials such as the Hillman Composite Beam, and these could be incorporated in the Eastport Breakwater.



*Hillman Composite Beams and the Knickerbocker Bridge, Boothbay Harbor, Maine  
(click photos to enlarge)*

Other materials which could be implemented on this project are plastics in the form of sheet pile retaining wall systems, wave barriers, and low-friction fender panels. Plastic sheet piles can be used in retaining wall applications where the height of the wall is nominal, such as around waterfront properties or abutment locations. Plastic sheet piles are corrosion-resistant but require proper design against long-term forces and deflections; hence the reason for maintaining a minimum height in application. Similarly, plastic materials are a good choice for surfacing fender panels by providing a low-friction surface for berthing vessels. The importance of this application is that low-friction fender panels minimize the force imparted into the waterfront structure and allow the vessel to berth against the structure. Plastics can provide a smooth, light-weight surface for the vessel to ensure no damage to the vessel or the structure.





## PARTNERSHIPS

Since 1962, the Eastport Breakwater has served the greater Eastport community as a vital component of its waterfront utility while preserving its downtown character and charming appeal. It is no surprise that the replacement of this structure is endorsed on so many fronts, from governmental agencies to the local and regional entities who rely on this very important waterfront feature. But now that the remaining service life of this structure has finally come to an end, we cannot allow its loss to become a reality. The people of Eastport and the State of Maine understand its importance to our way of life, and these agencies have provided written testimony which speaks to the very essence of this project. This project is endorsed by United States Senators and Congressional Delegates, the State of Maine, and the Federal, regional, and local waterfront entities of Eastport. We are ready to move forward with this project and look forward to its successful completion. Links to these endorsements are provided at our project website.

The Port of Eastport has a long standing relationship with its port partners, contractors, and suppliers, and strives to improve upon these relationships by maintain its infrastructure. For example, the Quoddy Pilots are one of two piloting services and a tug boat company to help assist and guide large vessels safely to and from the Breakwater and Estes Head. Also, the Federal Marine Terminal, Co. (FMT) provides fast, efficient, and damage free handling of every type of cargo, including all types of steel products, project cargoes, containers, forest products, agricultural products, frozen foods, automobiles, and various dry and liquid bulk commodities. The port's operations team of stevedoring, piloting, and vessel assistance has consistently shown to be some of the most competitive services in the region. Reducing wait times and load times to keep costs low are everyday goals in Eastport, and are an attribute to the facility's efficiency and reliability for transporting goods. These internal partnerships within the port are interdependent and provide a perfect synergy for transporting any type of cargo to the greater Eastport community.

The proposal to enlarge the breakwater from 400 feet to 500 feet in length would strengthen the port's partnerships with the U.S. Navy, U.S. Coast Guard, large cargo vessels, and the cruise ship industry by providing greater berthing space for larger vessels. As these vessels continue to increase in size, the Port of Eastport will be well served with a larger breakwater and the ability to attract new services and maintain its core affiliates.

### Project Endorsements

- [U.S. Senators](#)
- [U.S. Congressional Delegates](#)
- [U.S. Coast Guard](#)
- [U.S. Customs & Border Patrol](#)
- [Maine Governor](#)
- [Maine Senator](#)
- [Maine DOT Commissioner](#)
- [Maine Port Authority](#)
- [Maine Chamber of Commerce](#)
- [Maine Better Transportation Assoc.](#)
- [University of Maine](#)
- [Northern Maine Development](#)
- [City of Eastport](#)
- [Washington County](#)
- [Washington County COG](#)
- [Washington County SCEC](#)
- [Ocean Renewable Power Company](#)
- [Federal Marine Terminals](#)
- [Cruise Maine](#)
- [Quoddy Pilots](#)
- [Cooke Aquaculture](#)
- [Eastport Windjammers](#)
- [Quoddy Bay Lobster Company](#)
- [Eastport Chowder House](#)

*Project Endorsements  
(click to read stakeholder testimonials)*





## BENEFITS-COST ANALYSIS

### *SUMMARY OF BENEFITS & COSTS*

Replacement of the breakwater in Eastport will create benefits to the U.S. Economy by enabling the U.S. to sustain competitive fishing and export activities associated with the Eastport Breakwater, and retain its current integration with summer tourism and festival activities that involve considerable cross-border economic activity. The key industries supported by the Breakwater include the many facets of the hospitality industry, as well as a robust aquiculture operation and export activities associated with the Northeast's pulp and paper exports. Thermogen Industries announced in February 2013 that they will build a torrefied wood pellet biofuel manufacturing facility in Eastport, with the primary goal of providing wood pellet exports to Northern Europe from the marine facilities at the Port of Eastport. Replacement of the Eastport Breakwater is expected to enable U.S. businesses to continue to provide the marine-related services that contribute significantly to a vital cross-section of business output (and associated revenues) that would otherwise be lost to Canada. This section describes the nature of these benefits and the assumptions made in the Benefit Cost Analysis (BCA) Appendix for calculating their present value in relation to the net present value of the costs of the project.

### *COST SUMMARY*

The Breakwater project is expected to cost approximately \$11 million to construct, with annual operation and maintenance costs of approximately \$20,000. This compares to a base case, where if the Breakwater is not reconstructed, the public will incur a \$2.6 million cost to excavate and remove the dilapidated structure, replace this structure with a sheet-pile wave screen, and incur approximately \$5,000 per year to maintain the wave screen in the absence of the Breakwater. This yields a net undiscounted cost of approximately \$8.7 million and a net annual operations and maintenance cost of approximately \$15,000 per year. The present value of the cost stream is approximately \$7.7 million if discounted at 7% from the construction until 2040, and \$8.2 million if discounted at 3%. **Table A-3** of the **BCA Appendix** shows the project costs, and the development of project costs by years. **Table A-4F** of the **BCA Appendix** shows that present value of the cost stream discounted to 2040 (by year). To Access the BCA Appendix Tables, click on the icons below, or click on the link to the live spreadsheet file.



### BCA Appendix Tables (click to enlarge)

Table A-1

Table A-2

Table A-3

Table A-4

Table A-5

For a live version of this spreadsheet and the BCA Tables shown here, [CLICK HERE](#).

Summary Table 1 below (from **Table A-3A** of the **BCA Appendix**) summarizes the base case and project costs assumed for this project.

**Summary Table 1**  
**Description of Base and Project Costs**

Base Case		Project
Excavation	\$480,000	\$0
Removing old steel sheet piling	\$270,000	\$0
New steel sheet piling	\$2,000,000	\$0
<b>Total Capital Outlays</b>	<b>\$2,750,000</b>	<b>\$11,025,000</b>
<b>Annual O&amp;M</b>	<b>\$5,000</b>	<b>\$20,000</b>

#### *BENEFITS SUMMARY AND BENEFITS-COST RATIO*

The present value of the cumulative benefits of the project to 2040 is valued at \$35.5 million, discounted at 7% and \$57.2 million discounted at 3%, yielding a benefit-cost ratio (BCR) of 4.6 or 7.0 for 7% and 3% respectively. For the purposes of this narrative, all benefit streams are henceforth described at the 7% rate, with the 3% and 7% shown, along with the benefit streams by year in **Table A-4** of the **BCA Appendix**. Summary Table 2 shows the benefits to the U.S. Economy in the societal benefit categories relevant to the TIGER application, and Summary Table 3 shows the Benefits-Cost Ratios at the two discounted rates..



**Summary Table 2**  
**Summary of Societal Benefits & Costs (constant 2013 dollars in Millions Discounted 7%)**

Sources of Benefits	Value of Benefit	Economic Competitiveness	Safety	Environmental Sustainability	Livability	State of Good Repair
Benefit Type						
Tourism Benefits	\$13.2	✓	✓		✓	
Revenue from Salmon Farming & Fishing	\$17.7	✓				
Revenue from Port Operations (Pulp and Paper - No Wood Pellet Exports are Included in this calculation)	\$4.6	✓	✓			✓
Total Benefit	\$35.5					
Capital (start-up cost, Project-Base Case)	\$7.5					
Operation & Maintenance Costs (Project-Base Case)	\$0.2					
Total Cost	\$7.6					
Benefit-Cost Ratio		4.6				

**Summary Table 3**  
**Benefits and Costs for Eastport Breakwater**

Eastport Breakwater	3% Discount Rate	7% Discount Rate
Discounted Benefits	\$57.2 million	\$35.5 million
Discounted Costs	\$8.2 million	\$7.6 million
Net Present Value	\$49.0 million	\$27.9 million
<b>BC Ratio</b>	<b>7.0</b>	<b>4.6</b>



*Benefits from Tourism (\$13.2 million):*

The economy of the Eastport region is highly seasonal and highly dependent on tourism. In 2012, total taxable retail sales in the Eastport region amounted to nearly \$21 million. Of that, approximately \$8 million occurred during the third (July to September) quarter. Total third quarter sales were 2.5 times larger than first quarter sales, indicating the high seasonality of the Eastport economy. For the meals and lodging sector, seasonality is even more exaggerated, with third quarter sales (\$3.3 million) accounting for half of the annual total and nearly five times the level of quarter one sales. Though less exaggerated than retail sales, private employment exhibits a similar pattern. Third quarter total employment in 2012 (424) was 25% higher than first quarter employment (340). In short, the entire Eastport economy is highly dependent on the summer tourist season. There is a share of tourist revenue accruing to U.S. businesses in the Eastport region that will be lost to competing Canadian locations if the Breakwater is not replaced and enabled to continue operating at its current level. **Tables A-1A and A-2A** of the **BCA Appendix** show how the expected benefit levels are derived by year using assumptions from the May 31, 2013 [Economic Impact Report](#) titled, *Economic Impact on Washington County, Maine of the Breakwater Pier in Eastport, Maine* and supporting data from Minnesota IMPLAN group's input-output model. The calculations in **Table A-1A** and **Table A-2A** explain the contribution of tourism activity directly attributable to activities supported by the project to the benefit streams shown in **Tables A-4A and A-4B** of the **BCA Appendix**.

**FESTIVALS:** Early to mid-July is a time where both U.S. and Canadian holiday festivals are celebrated. Eastport has also traditionally marked the end of the tourism season during the U.S. Labor day weekend with a festival celebrating the local fishing industry. During the week of the 4th of July, the U.S. Navy traditionally moors a large vessel at the Eastport Breakwater. During the first week in September, Eastport holds its annual Pirate Festival featuring lobster boat races and a wide variety of family-oriented activities and events throughout the town. Both of these festival weeks draw 10,000 to 15,000 visitors to Eastport and are centered on the Breakwater and support a highly walkable and local business oriented series of community activities.

The festivals associated with these national holidays initiate and close out the summer tourist season, which includes a with range of activities along what is referred to as the Quoddy Loop – a series of destinations in both the U.S. and Canada. Recent studies of the characteristics of tourism attracted to Eastport during these summer festivals indicate that these visitors spent similarly to the pattern noted in the Maine Office of Tourism's Summer 2011 visitor survey and that 80% of the visitors are overnight visitors (as opposed to day trippers). Based on these spending patterns, these two festivals alone generate approximately \$2.6 million in sales for the Eastport ESA, fully one-third of its third quarter total.

Without the Breakwater, the 4th of July Festival would cease to exist because the central attraction, the large naval vessels, would not be able dock, and the Pirate Festival would be greatly diminished because of the absence of a central staging area for the lobster boat races.



Because the festivals draw a majority of their participants from Canada and tourists on routes that have mostly Canadian destinations, much of this business would be lost revenue for the U.S. if the Breakwater ceased to exist. **Based on the Economic Impact Report, it is estimated that approximately 57% of this business would be lost due to reduced Canadian tourism participation in U.S. events.**

**CHARTER CRUISES:** The Eastport Breakwater provides a base of operations for two charter vessels: a charter fishing boat with a capacity of six passengers and a sailing schooner with a capacity of 30 passengers. In addition, an outfitting company regularly uses the Breakwater for some of its sea kayaking tours. Together these companies provide Eastport visitors with a wide variety of deep-sea fishing, whale watching, bird watching, scenic exploration, sunrise and sunset cruises. Assuming that these vessels operate at 75% capacity for 90 days, that 80% of their passengers are overnight visitors and that they spend as the average visitor surveyed by the Maine Office of Tourism survey (with the addition of charter fees), these businesses serve over 5,000 visitors and generate sales for the Eastport economy of over \$825,000.

These businesses, like fishermen, could operate without the Breakwater; however, they would almost certainly not operate in Eastport any longer (or, in the case of the sea kayaking company, stop less frequently, if at all, in Eastport). They would move to some other area with a protected berthing space and a safe and stable facility for loading and unloading passengers and provisions. Under these circumstances, Eastport would certainly lose the brand and momentum of visitation that has been built over recent years based on the availability of the Breakwater. **Based on the Economic Impact Report, it is estimated that approximately 46% of Eastport's charter cruise business would be lost to St. John and other Canadian locations if the Breakwater is not replaced. This assumes that about 80% of the charter business currently attributed to Canadians would be redirected to Canadian ports. The analysis assumes that the remaining 20% of Canadian recreational fishermen would use similar services in other U.S. Downeast Maine ports. Although some U.S. fishermen would likely charter services in Canadian ports, this analysis did not assume any leakage of U.S. charter expenditures to Canadian ports.**

*Benefits from Aquaculture (\$17.7 million):*

Cooke Aquaculture employs 20 people operating five salmon farm sites in the Eastport area. Were the Breakwater to disappear, the company would be forced to find an alternative location from which to service these sites. **Currently the only alternative location in proximity to Eastport is in Canada. Hence revenues and employment derived from the current salmon farming activity will likely be lost revenue for the U.S. Economy if the Breakwater is not replaced. This means that the Breakwater would save the U.S. Economy at the very least the 20 salmon farming jobs, with their associated economic output.**

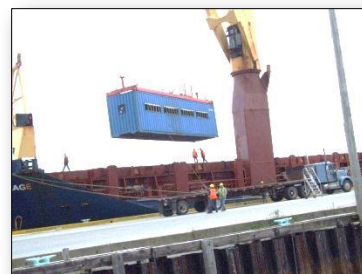
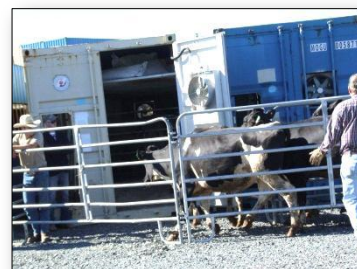




**Tables A-1B and A-2B of the BCA Appendix** show in detail the assumptions leading to the stream of benefits associated with keeping these salmon farming jobs in the U.S. (in terms of U.S. output), which are subsequently incorporated into the benefit streams shown in **Table A-4A and A-4B of the BCA Appendix**.

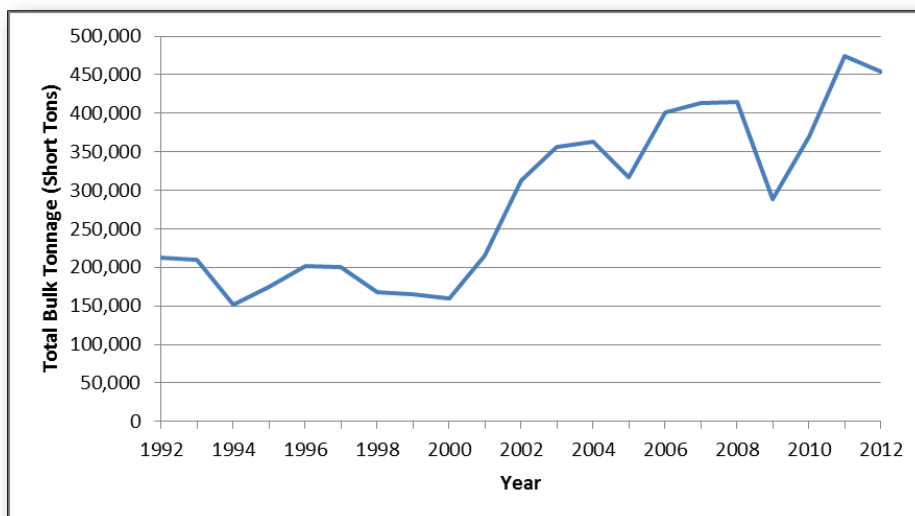
*Benefits from the Export of Agricultural and Forest Products (\$4.6 million):*

The Port of Eastport provides marine port and landside loading facilities primarily for kraft pulp exports generated by local paper mills at the Woodland Pulp production facility in Baileyville, Maine. Recently, the Port of Eastport has begun handling live cattle exported to the Middle East. Cargo operations at the Breakwater general work in tandem with the Estes Head Cargo Terminal on the opposite side of Moose Island. Kraft pulp exports from Estes Head take precedence in loading because the volume and critical competitive importance of reliable export pulp shipments required by paper companies using the Port of Eastport. The Breakwater serves overflow traffic that has enabled the overall traffic at Eastport to achieve a significant recovery over the past several years. Since vessel loading operations can require up to two to three days, periodic overflows have occurred, and are expected to continue occurring as bulk volume builds at Estes Head. Figure 11 shows the bulk tonnage shipped through Eastport over the last 20 years.



*Live Cattle Transport Operations at Eastport Breakwater (click pictures to enlarge)*

**Bulk Tonnage Shipped Through Port of Eastport (1992 to 2012)**



*Figure 11 - Bulk Tonnage Shipped Through Port of Eastport (1992 to 2012)*

Source: Maine Department of Transportation, Port of Maine: Marine Traffic Figures;  
<http://www.maine.gov/mdot/ofbs/marinetraffic.htm>



Without the overflow capacity provided by the Breakwater and the loading operations it supports, the potential for diversion of bulk cargo loading services to Canadian ports is likely. The nearest competitive port, located at St. John, New Brunswick, offers bulk cargo loading for pulp and paper products and is within competitive shipping distances from the Eastport port complex. Thus, the Breakwater provides an important function in assuring that vessel loading operations can be provided even during periods of peak loading at Estes Head.

**BIOMASS AND WOOD PELLET DEVELOPMENT:** Thermogen Inc. is a firm in the Eastport area that has recently announced plans to open a \$120 million wood pellet plant in Eastport, exporting an additional 200,000 to 300,000 pounds of wood pellets from Eastport to Europe. The plant is co-located near the Estes Head loading facilities, which have already received funds for construction of pellet loading facilities. These exports are expected to be shipped to markets in Great Britain and the Netherlands that have been created by the European Union's new rules on carbon emissions.

Company confirms plans for \$120 million Eastport wood pellet plant



[Thermogen Wood Pellet Plant News Article](#)  
(click picture to read article)

With the introduction of new exports of wood pellets expected to begin in 2015, demand for berth space at Estes Head is expected to nearly double from historical levels (see Figure 1). Therefore the role of the Breakwater to support overflow operations, including loading of live cattle and pulp, is expected to become even more vital to the competitive position of U.S.-based forest products in the future.

**ESTIMATION OF BENEFITS FOR WOOD PRODUCTS AND AGRICULTURAL EXPORTS:** Preservation of the Breakwater as an alternative to loading bulk cargo at Estes Head is critical to supporting the capacity provided by Estes Head for shipping services for wood pellet exports in the U.S., as well as continuing to provide services for pulp exports. While both the pulp production and pellet manufacturing activities would likely remain in the U.S. if the Breakwater were not replaced, it is likely that a portion of these exports would be sent to St. John, Canada for loading and export to Europe. This will result in the loss of port service jobs in Maine and its associated output in the U.S. economy.

For purposes of computing the benefits of replacing the Breakwater, we have assumed that only the marine services attributable to overflow operations will be affected if the project is not completed. We have not factored in any loss of production due to increased costs to transport or ship these products to Canada, and we have not assumed that any production by either the existing pulp mills or the future pellet manufacturing operations will suffer due to lack of overflow capacity.



Based on these assumptions, and using the Maine Department of Labor data, the average per day wage of workers in the transportation and warehousing sector in Eastport over the most recent four quarters for which data are reported was approximately \$200. Seventy (70) workers are needed per ship call for an average of 2.5 days to load each ship. This results in an estimate of \$35,000 in local wages per ship loading.

In 2011, the Breakwater serviced six (6) overflow calls in addition to all other marine activities (fishing, festivals, recreational boating) supported by the pier's capacity. This occurred at the peak year (in terms of total bulk cargo volume) in the past 20 years (see Figure 10). However, given the markets for pulp exports, current investments in plant and equipment in nearby pulp processing facilities, and the recently announced investments in wood pellet manufacturing (supported by long-term contracts with European utilities for torrefied wood pellets produced by the Eastport processing facility), we expect that an average servicing of six vessels per year at the Breakwater will be a minimum. This accounts for both the volumes of future shipping, and the vessel class expected to be employed in pellet and pulp exports (currently, pulp products are being shipped out in Handysize vessels with a 25,000 to 40,000 DWT capacity). Both the Estes Head and proposed new Breakwater would accommodate larger classes of bulk carriers, which would increase loading time per vessel, but could also reduce the number of vessel calls. Therefore, we have assumed that the current six vessels per year overflow rate is a good indicator of future overflow operational requirements.



*Torrefied Wood Pellets*

An average of six ship calls per year to Eastport Breakwater equates to \$210,000 in wages that would be lost to Canadian ports if the renovation does not occur. Using BEA and BLS data ratios within IMPLAN, the \$210,000 in wages equates to \$410,498 in output for cargo operations. The wages and output are only reflective of the work for the six ship calls and are not reflective of any annual wages or output for an average worker. Thus the values of \$5,864 output per job and \$3,000 per job only reflect the work completed on the six ship calls. **Tables A-1C and A-2C** of the BCA appendix show how the preservation of this port business in the U.S. is derived into a share of the economic benefit of the breakwater, and included in the totals shown in **Tables A-4A and A-4B** of the **BCA Appendix**.



### *ECONOMIC IMPACTS*

The economic benefits described in the previous section are also likely to create stimulus to the local economy. The direct business output maintained in the U.S. as a result of the tourism, salmon farming and port activity enabled by the Breakwater will naturally support direct jobs, wages and value-added in the U.S. Economy. These impacts are derived from the business output enabled by the project in the **BCA Appendix** as shown in **Tables A-4C, A-4D and A-4E**, and summarized in **Table A-4G** of the **BCA Appendix**. (**Table A-4G** of the **BCA Appendix** is shown as Summary Table 4 Below). The project is likely to result in over 3,100 job-years, over \$38.0 million in wage income, over \$55.5 million in value-added and over \$87.5 million in business output from project inception in 2014 to 2040.

**Summary Table 4: Economic Impacts**

Type of Impact	Tourism & Festivals	Salmon Farming	Port Activity	Total Impact
Impact on Jobs (in Job-Years)	547	584	1,977	3,108
Cumulative Impact on Wage Income	\$12,592,911	\$19,870,217	\$5,931,072	\$38,394,200
Cumulative Impact on Value-Added	\$18,559,003	\$29,328,954	\$7,635,507	\$55,523,464
Cumulative Impact on Output	\$32,121,299	\$43,793,447	\$11,593,767	\$87,508,513





## PLANNING APPROVALS

This project will require approximately four months to secure environmental and city approvals once Notice to Proceed is awarded. Projects receiving federal monies or projects requiring federal actions require evaluation consistent with the National Environmental Policy Act (NEPA). Given the location of the project within a tidal area, the permitting requirements will need to satisfy U.S. Army Corps of Engineers and Maine Department of Environmental Protection regulations. Through the use of steel pipe piles for the foundation elements, the footprint of the construction activity on the seafloor will be minimized; therefore, it is anticipated that this project will qualify for Categorical Exclusion (CE) through the NEPA process. The project will likely require either a Section 404 permit or a Section 10 permit from the Army Corps of Engineers due to the component of in-water work. The Corps will likely issue a Programmatic General Permit (Category 2) for Breakwater replacement.

State and local permits for the Eastport Breakwater will include a Natural Resources Protection Act (NRPA) permit for the Breakwater replacement. In particular, marine coastal resources below the high tide line, such as wetlands or fisheries habitat, are subject to review by the Maine Department of Environmental Protection. The proposed Breakwater replacement would be subject to review by the City of Eastport Planning Board or administratively by staff of the planning department. Due to the safety aspect of the existing 1962 section of the Breakwater, its demolition has already been vetted with the local community and its final approval is simply a matter of official business. The construction of the new Breakwater structure will require a Building Permit. The time frame associated with the permitting effort is shown in the project schedule.

The design consultant will undertake permitting responsibilities as part of its role in the design phase of the project, once a preliminary set of plans and specifications are developed and ready for agency review. The local zoning and planning boards within the greater Eastport community, as well as the city code enforcement, have indicated that there are no significant constraints to permitting the proposed improvements. As with previous projects of immediate importance, the State of Maine will fast-track the permitting process to ensure a timely resolution to all permit applications.





## FEDERAL WAGE RATE CERTIFICATION

The State of Maine is committed to ensuring the federal wage rate requirements on this project, as it does will all projects which receive federal monies. The letter below certifies our compliance with the provision of the FY 2013 Continuing Appropriations Act.



Paul R. LePage  
GOVERNOR

STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION  
16 STATE HOUSE STATION  
AUGUSTA, MAINE 04333-0016

David Bernhardt  
COMMISSIONER

May 28, 2013

To Whom It May Concern,

*Please let this letter serve as our certification that the State of Maine will comply with the requirements of Subchapter IV of Chapter 31 of Title 40, United States Code (federal wage rate requirements), as required by the FY 2013 Continuing Appropriations Act. Should you have any questions about our certification, please do not hesitate to contact me.*

Sincerely,

John H. Henshaw

Director of Ports & Marine Transportation



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