APPENDIX A

EIS Maritime Industry Contact Interview Log and Interview Summaries

DRAFT EIS MARITIME INDUSTRY CONTACT INTERVIEW LOG

THIS LOG PROVIDES FOR INDUSTRY CONTACT AND INTERVIEW DOCUMENTATION

Organization	Significance/ Key Characteristics	Contact Name	Title	Telephone #	Date	Time/Duration	Topic Summary
CTDOT	Dredging Coordinator	Joe Salvatore	Dredging Coordinator	860-694-2539	11/4/2008	I hour	Discussed maritime industry dredging needs, planning and priorities.
Connecticut Marine Trades Association (CMTA)	Boating Maritime Trade Organization	Grant Westerson	Ex. Director	860-767-2645	11/10/2008	I hour	Discussed marine trade organization, membership, history, economic impact study, previous CMTA survey and most recent survey, and business and dredging issues as they concern the CMTA membership serving recreational boaters throughout Connecticut.
Bridgeport Port Authority	Port management operations and oversight	Joe Riccio	Ex. Director	203-384-9777	12/3/2008	2.5 hours	Discussed maritime industry and issues related to sustaining and growing maritime industry in Bridgeport Harbor and in Connecticut as a whole.
Gateways Terminals	Terminal industries import / export materials handling within port district	Thomas Dubno	CFO	203.467.1997	1/14/2009	1.5 hours	Maritime economy, infrastructure improvements to maintain & expand business opportunities.
Gateways Terminals	Terminal industries import / export materials handling within port district	Coy Angelo	President	203.467.1997	1/14/2009	1.5 hours	Maritime economy, infrastructure improvements to maintain & expand business opportunities.
DECD	Economic studies, secondary data sources, strategic planning	Stan McMillen	Managing Economist	860-270-8166	11/18/2008	1.5 hours	Discussed DECD Strategic Plan development, maritime industry aspects of strategic plan, and previously completed economic analyses/reports that have relevance to EIS.
New Haven Port Authority	Harbor management promoting trade and commerce within port district	Judi Sheifele	Board member - Secretary	203-946-6778	1/23/2009	2.0 hours	Enhance economic competitiveness of New Haven Port and Connecticut maritime industry through waterborne transportation.
Sound Marine Skills	Trade educational group	Dan Synder	Director	203-488-3316	1/25/2009	1.0 hour	Discussion of skills and labor needs for expansion of maritime industry.
Bridgeport Harbor Commission	Harbor management planning	Peter Holecz	Chairman	203-335-3574	1/26/2009	1.5 hours	Managing and promoting harbor & maritime industries in Bridgeport, public policy & barge service concepts.
Bridgeport Port Authority	Port management operations and oversight	Robert Scinto	Harbormaster	203-384-9777	1/26/2009	1.5 hours	Managing and promoting harbor & maritime industries in Bridgeport, public policy & barge service concepts.
CT Seafood Advisory Council	Commercial fishing & seafood Industry	Nancy Balcom	Associate Director and Extension Program Leader	860-405-9107	2/3/2009	1.5 hours	Seafood Industry and Lobster Survey. Aquaculture and commercial fishing industry. She supplied contacts for the CT Marine Fisheries (Licenses) and the Bureau of Aquaculture.
Town of Stonington, CT	Commercial fishing & seafood Industry activity center	Edward Haberek, jr.	First Selectman	(860) 535-5050	2/6/2009	1.5 hours	Harbor Improvements, commercial fishing activities, infrastructure and pier/dredging issues and maintanence and expansion of maritime character of Town and region.
Town of Stonington, CT	Commercial fishing & seafood Industry activity center	William Haase	Director of Planning	(860) 535-5095	2/6/2009	1.5 hours	Harbor Improvements, commercial fishing activities, infrastructure and pier/dredging issues and maintanence and expansion of maritime character of Town and region.
US Army Corps of Engineers	Army Corp dredging projects.	Mike Keegan	Project Manager	978-318-8111	2/9/2009	3/4 hour	Army Corp projects, dredge program update and LIS Designation EIS.
New Haven Office of Economic Development	City maritime economic development representative	Helen Rosenberg	Business Service Officer	203-9465889	2/20/2009	0.5 hour	Economic competitiveness of New Haven port through waterborne transportation. Supplied contacts for Mike Piscitelli, Donna Hall and Judi Shiefele.
Logistech	Maritime industries in New Haven/ Bridgeport Harbor .	Martin Tristine	President (former)	203-416-1377	2/27/2009	3/4 hour	New Haven and Bridgeport Maritime Industries providing industry insight.
Stamford Chamber of Commerce	Stamford Maritime Industrial, commercial and fishing Community	Jack Conlon	President	203-359-4761	3/2/2009	0.5 hour	Stamford Maritime Businesses (historic and future) providing information on maintaining and expanding business opportunities.
Cross Sound Ferry Services, Inc.	Maritime Industries including Ferry Services, Boat building and repair, and ocean towing services.	John Wronoski	President	860-443-7394	3/5/2009	1.25 hours	Long Island ferry service and industry concerns over dredging, parking, State of CT tax and possible subsidizing of ferry service to alleviate truck and car traffic on Rte 95.
Cross Sound Ferry Services, Inc.	Maritime Industries including Ferry Services, Boat building and repair, and ocean towing services.	Rich McMurry	General Manager	860-443-7394	3/5/2009	1.25 hours	Long Island ferry service and industry concerns over dredging, parking, State of CT tax and possible subsidizing of ferry service to alleviate truck and car traffic on Rte 95.
Brewer Yacht Yards	Major marina yacht yard operators	Rives Potts	General Manager	860-399-7906	03/0509	3/4 hour	Marina and maritime business/industry concerns such as permits, dredging and tax code.
Brewer Yacht Yards	Major marina yacht yard operators	James Phyfe	Facility Administrator	(401) 884-1810	2/18/2009	1 hour	Marina operational issues including costs and timing for industryincluding dredging, permits and growth.
Coastline Terminals of CT	Terminal operations and management	David Shuda	President	203-996-5493	3/5/2009	1.0 hour	New Haven and Bridgeport harbor / dock industries and "other" state competitive marketing for business to off-load in Connecticut.
City of New Haven	Transportation, Traffic and Parking Department	Mike Piscitelli	Director	(203) 946-8067	3/9/2009	3/4 hour	Harbor Improvements and Stimulus package.
City of New Haven	Harbor management promoting trade and commerce within port district	Judi Sheifele	Board member - Secretary	(203) 946-8067	3/9/2009	3/4 hour	Harbor Improvements and Stimulus package.
Cross Sound Ferry Services, Inc.	Maritime Industries including Ferry Services, Boat building and repair, and ocean towing services.	Adam Wronoski	Company Officer	(860) 443-7394	3/10/2009	1.0 hour	Boat building and repair, and ocean towing services.
Cross Sound Ferry Services, Inc.	Maritime Industries including Ferry Services, Boat building and repair, and ocean towing services.	Rich McMurry	General Manager	(860) 443-7394	3/10/2009	1.0 hour	Boat building and repair, and ocean towing services.
Beacon Point Marina	Recreational marina industry	Rick Kral	President	(203) 661-4033	3/11/2009	1/4 hour	Marina Industries
CT Cruise Ship Task Force	Cruise Ship Industry	George Cassidy	Executive Director	(860) 535-9871	3/18/2009	3/4 hour	Cruise Ship Industry in New London.
O&G Industries	Maritime / construction industry	Richard Warren	Facilities Administrator	(203) 366-4586	31/8/2009	1.5 hours	Commercial / Industrial Activities at Port / Harbor materials transfers & industry maintenance and growth.
Southeastern CT Enterprise Region (SECTOR)	501C3 Non-profit group	John Markowitz	Executive Director	860.437.4659	3/19/2009	3/4 hour	New London Harbor Businesses and State Pier data.
Mystic Seaport	Educational / Tourism	Chris Freeman	Campaign Officer	(860) 912-3121	3/19/2009	1/4 hour	Infrastructure impacts on tourism.
Mystic Seaport	Educational / Tourism	Bill Parent	Vice President of Facilities	(860) 572-5302	3/20/2009	1/2 hour	Dredge permitting and project management issues.
Sound School	Trade educational group	Jack Bechke	Business Manager	(203) 946-6937	10/14/2009	1/2 hour	
UCONN (Avery Point)	Educational Group	Thomas Dugay	Financial Office - OIR	(860) 405-9025	10/14/2009	1/2 hour	UCONN Avery Point tuition, professionorial levels and operating costs.

INTEROFFICE MEMORANDUM

TO: FILE

FROM: DAVID LIS

SUBJECT: CMC ECONOMIC EVALUATION TELEPHONE INTERVIEW: DAN SNYDER (SOUND MARINE SKILLS, INC.)

DATE: 02/25/09 (1:40 PM – 2:20 PM)

CC:

Apex spoke with Dr. Daniel Snyder, President & CEO of Sound Marine Skills, Inc. on February 25, 2009 related to the Connecticut Maritime Coalition (CMC) Economic Impact Study (EIS). This memo documents the information obtained from Dr. Snyder during the telephone interview.

Dr. Snyder did not have specific data related to the impact of infrastructure and dredging on the maritime industry in the State of Connecticut but rather had ideas and suggestions relative to the issue of education and skills training related to the health and future of the industry.

Dr. Snyder indicated that he believed that labor represented a significant portion of the overall revenue related to the maritime industry in Connecticut and that labor and more precisely, skilled labor was in short supply associated with the maritime industry. As such, Dr. Snyder suggested that the CMC incorporate job skills/training component to the EIS interview process and in particular questions related to training, hiring and advancement practices. It was indicated to Dr. Snyder that education and training was a business sector in the EIS (although a detail assessment relative to the above aspects is not included in the EIS scope) and that his suggestions would be considered and incorporated, as appropriate, given the particular relevant interviewee during the EIS interview process. Dr. Snyder offered to review the data if obtained during the interview process. Elements suggested by Dr. Snyder include the following:

- Skilled Labor – source of employees both entry level and more skilled
- Job Conditions – training latter and prospects for advancement
- Training and Certifications – on- job, trade organizations, private and public education
- Compensation – entry level and more skilled, pay scale, pension/401k etc., remuneration for licenses, certifications, etc.

Dr. Snyder believes that a strong maritime economy can only benefit the Sound Marine Skills by providing sustainable job growth in the maritime community and enhance the Sound Marine Skills' mission to prepare and educate a workforce to fill new job openings in the Maritime environment.

Dr. Snyder recommended that Apex interview Mr. Rick Kral (203-661-4033) of Beacon Point and Bill Gardella, Jr. (203-866-5555) of Norwich Marina relative to marina sector activities for the EIS.

INTEROFFICE MEMORANDUM

TO: FILE

FROM: DAVID LIS

SUBJECT: CMC ECONOMIC EVALUATION INTERVIEW: GEORGE CASSIDY (EXECUTIVE DIRECTOR / CRUISE LINE SCHEDULING & OPERATIONS OF THE CONNECTICUT CRUISE SHIP TASK FORCE, INC.)

DATE: 03/20/09 (9:15 AM – 9:58 AM)

CC:

Apex spoke with Mr. George Cassidy, Executive Director / Cruise Line Scheduling & Operations of the Connecticut Cruise Ship Task Force, Inc. on March 20, 2009 related to the Connecticut Maritime Coalition (CMC) Economic Impact Study (EIS). This memo documents the information obtained from Mr. Cassidy during a telephone interview.

The Connecticut Cruise Ship Task Force (CCSTF) serves as the recruitment authority to bring and coordinate cruise ship visits to ports within the State of Connecticut. This organization acts as the link between private and public interests to promote the development of cruise ship passenger visits to the State. The CCSTF, a tax-exempt 501 (c) (6) organization, facilitates positive relationships between cruise lines and the State of Connecticut. This Task Force works with the cruise industry and port-related federal, state and local government agencies to promote the development of cruise ship visits to the State of Connecticut. It is the aim of the CCSTF to increase tourism by cruise ship passengers while in port, encourage return visits and positive word-of-mouth promotion of the State of Connecticut through port-calls made by cruise ship visits within the state and to educate all interested parties who may benefit from these visits.

Mr. Cassidy believes there are three major issues that are impacting the Cruise Line business at the New London State Pier (greatest impact to lesser impact):

1. Cruise line itinerary is presently coming out of the Boston area and traveling to the north such as Quebec and Newfoundland, Canada destinations. New London is not presently in the direct path of the cruise ship route. Historically, ships came out of the New York harbor area and went by New London on its way to other ports.

2. Cruise Line captains have requested that the mooring anchors (dolphins) on the west side of the State Pier be removed to allow more maneuverability when docking at the State Pier.

3. Some minor dredging needs to be performed on the southwest side of the State Pier such that two deep draft ships (such as a liner and cargo vessel) can dock at the same time.

Mr. Cassidy stated that Cruise Line revenues in 2007 were approximately $2M and in 2008, the revenues were $1.3M from the tourist trade. The Cruise Line estimates that $150 / passenger would be spent at tourist destinations while at port (approximately 3,000 - 3,400 passengers / liner). No cruise liners are anticipated for 2009 and at this time, no liners are booked for 2010. Mr. Cassidy believes that the most of the revenues when to the tourist industries in southeastern Connecticut including: the Essex Steam Train, Mystic Sea Aquarium / Seaport and downtown New London shops. Maritime industries such as tow boat companies (on call) and "line" handling services could be $2K per visit. Mr. Cassidy also rents out the Union Railroad Station for 1,000 / event when a cruise ship comes into port as a welcoming / greeting location.

1. **How does reduced or limited water depth at CT deepwater ports (channel, basins, piers) affect shipping, fishing, ferry service, recreation or other maritime business activity?**

Mr. Cassidy stated that dredging has no real impact in New London on the Cruise Line business as long as no other deep draft vessels are at port at the time. The east side of the State Pier is OK. But the west side needs to be dredged to 35 feet.

2. **How would dredging improve economic conditions, and what other infrastructure improvements would be needed to support maritime business expansion/growth? How would business benefit from development of Brownfield sites in the port area? Do you know of any federal or state funding for remediation/reuse plans of contaminated sites in the port area?**

Mr. Cassidy did not respond to the Brownfield site development question.

3. **What are regional or state market trends, economic factors influencing maritime industry over the next five years, and what are attributes/attractions in terms of retaining or capturing market opportunities?**

Mr. Cassidy stated that he doesn't feel that a lot can be done to change the cruise line itinerary / port of call issues. New London is qualified as an "emergency" port and can take on cruise liners within a two week period.

4. **What are the educational/training requirements for the Cruise Line business?**

Training – 95% of the workforce for the New London cruise line effort are volunteers (35 persons). All other personnel are in-house / on the job trained.

INTEROFFICE MEMORANDUM

TO: FILE

FROM: DAVID LIS

SUBJECT: CMC ECONOMIC EVALUATION TELEPHONE INTERVIEW: GRANT WESTERSON (CONNECTICUT MARINE TRADES ASSOCIATION)

DATE: 11/10/08 (10:30 AM – 11:30 AM)

CC:

Apex and FXM spoke with Mr. Grant Westerson of the Connecticut Marine Trades Association on November 10, 2008 related to the Connecticut Maritime Coalition (CMC) Economic Impact Study (EIS). This memo documents the information obtained from Mr. Westerson during the telephone interview.

Mr. Westerson is the executive director of the CMTA which represents the interests of the recreational boating industry and associated businesses in Connecticut. Associated businesses include but are not limited to manufacturers, dealers/brokers, law firms, insurance, marinas, trucking companies, cleaning and waste management companies. The organization represents more than 300 members and is active in the regulatory process as it affects this diverse maritime industry segment. Mr. Westerson indicated that this number represented approximately 80% of the recreational market universe here in Connecticut. Mr. Westerson indicated that he was in the process of conducting an economic survey of his membership. Apex indicated that a copy of the survey had been provided previously to Apex. The survey requested proprietary information from the membership. Mr. Westerson indicated that he had had a 60 to 70% return rate on his survey but that it had not been collated and was in an unusable form at the present. Mr. Westerson indicated that the data may be in more usable form for use by Apex after the new year (2009).

How does reduced or limited water depth at CT ports (channel, basins, piers) affect shipping, fishing, ferry service, recreation or other maritime business activity?

Mr. Westerson indicated that marinas were hampered by the costs and time delays of dredging and pier/marina permitting and implementation. However, for the most part, recreational boating was not a major factor in the major CT ports such as Bridgeport and New Haven. However, this was not the case along th remaining coastline as well as on the Connecticut River, Milford and Mystic Rivers, and North Cove in Old Saybrook. The cove is considered a harbor of refuge and it was anticipated that dredging would soon finally occur there shortly. Mr. Westerson indicated that barge traffic had been greatly reduced due to lack of dredging in the Connecticut River and in particular, fuel deliveries were either via pipeline or truck over highway.

How would dredging improve economic conditions, and what other infrastructure improvements would be needed to support maritime business expansion/growth? How would business benefit from development of Brownfield sites in the port area? Do you know of any federal or state funding for remediation/reuse plans of contaminated sites in the port area?

Mr. Westerson indicated that Michigan State University had conducted a study and model on recreational boating industry. Mr. Westerson noted that the study included significant number of interviews with recreational boating segment. With regards to supporting and improving the industry, streamlined permitting and cost effective ways to deal with dredge spoils would be beneficial to the industry.

What are regional or state market trends, economic factors influencing maritime industry over the next five years, and what are attributes/attractions in terms of retaining or capturing market opportunities?

Mr. Westerson indicated that beyond infrastructure improvements, taxation was a very significant issue that had a clear negative impact on the recreational maritime business in Connecticut. Mr. Westerson stated that Rhode Island offered a much better tax setting than Connecticut. Due to tax issue, boat building and purchases were adversely affected in Connecticut. Mr. Westerson indicated that he had provided the CT legislature with the tax program that RI had instituted but CT legislature failed to take action. Finally, Mr. Westerson indicated that RI has actively provided retraining/education support to the industry. It would be a good model for CT to look at and copy.

INTEROFFICE MEMORANDUM

TO: FILE

FROM: WILLIAM DROUIN

SUBJECT: CMC ECONOMIC EVALUATION TELEPHONE INTERVIEW: JACK BECHKE (SOUND SCHOOL)

DATE: 10/14/09 (10:20 PM – 10:45 PM)

CC:

Apex spoke with Mr. Jack Bechke, Business Manager of The Sound School Regional Vocational Aquaculture Center (203) 946-6937 x-2310) on October 14, 2009 related to the Connecticut Maritime Coalition (CMC) Economic Impact Study (EIS). This memo documents the information obtained from Mr. Bechke during the telephone interview.

Mr. Bechke did not have specific data related to the impact of infrastructure and dredging on the maritime industry in the State of Connecticut. He stated that the school didn't really need dredging at their docks, however he did stress the issue of education and skills training related to the health and future of the maritime industry.

Mr. Bechke was instrumental in providing operating budgets, teacher employment and student enrollment information. The information he provided is outline below:

Operating Budget	$ 4.5 million
$2.7 million from student tuition	
$1.8 million from City of New Haven	
Teacher (employment)	37
Student Body	320-340 students
School Size	5 on-site buildings

Dr. Bechke believes that a strong maritime economy can only benefit the Sound Marine Skills by providing sustainable job growth in the maritime community and enhance the Sound School's mission to prepare and educate a workforce to fill new job openings in the Maritime environment.

Please refer to the interview by Dr. Snyder provided on 02/25/09 for the Sound Marine Skills School.

INTEROFFICE MEMORANDUM

TO: FILE

FROM: DAVID LIS

SUBJECT: CMC ECONOMIC EVALUATION INTERVIEW: JOE RICCIO (BRIDGEPORT PORT AUTHORITY)

DATE: 12/03/08 (11:00 AM – 1:30 PM)

CC:

Apex spoke with Mr. Joe Riccio of the Bridgeport Port Authority on November 10, 2008 related to the Connecticut Maritime Coalition (CMC) Economic Impact Study (EIS). This memo documents the information obtained from Mr. Riccio during the onsite interview. Mr. Riccio is the director of the Bridgeport Port Authority and manages the interests of the maritime industry and port authority.

How does reduced or limited water depth at CT ports (channel, basins, piers) affect shipping, fishing, ferry service, recreation or other maritime business activity?

Mr. Riccio indicated that a draft dredge materials disposal plan had been prepared for the City of Bridgeport and incorporated a CAD cell for material generated during dredging of the Bridgeport harbor only. He indicated that the harbor, as of yet, had not been dredged to the control depth and that the lack of dredging had been one of several factors in the loss of business in the harbor. Mr. Riccio mentioned the loss of Turbana Co. as an example and indicated that the combination of lack of dredging to satisfactory depths and the uncertainty as to when dredging would be implemented was a significant negative aspect of retaining and attracting business to the port. Mr. Riccio also mentioned that Logistec, had lost significant business at both the Bridgeport and New Haven ports.

How would dredging improve economic conditions, and what other infrastructure improvements would be needed to support maritime business expansion/growth? How would business benefit from development of Brownfield sites in the port area? Do you know of any federal or state funding for remediation/reuse plans of contaminated sites in the port area?

Mr. Riccio discussed the need to take advantage of the potential lay-down areas in the port area to maximize opportunities and had considered roll on/roll off capability for a feeder barge system as well as an approximate 20 acre cargo terminal. Mr. Riccio indicated that between 1000 and 1200 foreign containers were on CT roads each day and that the feeder system could reduce this situation. He felt strongly that a distribution system including expanded and accessible lay-down areas would reduce environmental issues by taking trucks off the road and position the port to be a significant partner in economic growth for the city, state and region.

What are regional or state market trends, economic factors influencing maritime industry over the next five years, and what are attributes/attractions in terms of retaining or capturing market opportunities?

Mr. Riccio indicated that improved governance is critically important to maintaining and expanding the working port of Bridgeport. Mr. Riccio indicated that there was a need to have more regional control over the direction and use of the ports to accomplish the above. In particular, Mr. Riccio felt that enhanced state of conneciticut representation at the port authority commission level was critical to optimizing this important

state asset. Mr. Riccio indicated that an investment plan addressing statewide working ports including New London, New Haven and Bridgeport would be helpful in drawing attention to potential excellent opportunities that in the long run would benefit the local municipalities, state and region. Mr. Riccio again mentioned to short and long term opportunities with enhanced barge services and indicated the ever present pressures on working ports of Connecticut. Mr. Riccio suggested that we contact Mr. Marty Tristiene of Logistec (203-416-1377).

INTEROFFICE MEMORANDUM

TO: FILE

FROM: DAVID LIS

SUBJECT: CMC ECONOMIC EVALUATION TELEPHONE INTERVIEW: NANCY BALCOM (DIRECTOR, CT SEAFOOD ADVISORY COUNCIL)

DATE: 02/03/09 (11:15 AM – 12:00 PM)

CC:

Apex and FXM spoke with Ms. Nancy Balcom of the Connecticut Seafood Advisory Council) on February 3, 2009 related to the Connecticut Maritime Coalition (CMC) Economic Impact Study (EIS). This memo documents the information obtained from Ms. Balcom during the telephone interview.

Ms. Balcom represents the CT Seafood Advisory Council on behalf of state-wide commercial fishing industry. Ms. Balcom is also the interim associate director and extension program leader for the Connecticut Sea Grant at the University of Connecticut. Ms. Balcom indicated that NOAA had conducted a state-wide study of key businesses supporting the commercial fishing industry and included revenue, sales, and employment as well as federal records of landed seafood. The study included fish, lobster, squid, and sea scallops clams and oysters. Ms. Balcom referred us to Mr. Dave Corey, Connecticut Dept. of Agriculure (203-874-0696). Ms. Balcom indicated that the state collects data on reported landings. She also referred us to Mr. David Simpson at the CT Marine Fisheries office and indicated that we could request information on state permits for commercial fishing and bate.

Ms. Balcom indicated that there was a significant reduction in the commercial lobster sector circa 1999 associated with a significant lobster die-off and that the lobster industry was continuing to decline over the years. Ms. Balcom indicated that there was a processing plant in Stonington and a frozen stuff clam facility in Cheshire, CT. However, not enough produce was being landed by boat in Connecticut alone but was supplemented by land and from vessels recovering produce outside the CT shoreline. Ms. Balcom indicated that ability to spend more time fishing would increase landings as well as expansion of commercial viable species would be helpful. Ms. Balcom noted that to her knowledge New London had some commercial space allotted but additional dock space would be helpful. She indicated that commercial oystering occurred in Bridgeport, shellfishing in Norwalk, and shellfishing and possible lobstering in New Haven. She was not sure about Stamford.

Ms. Balcom indicated that Stonington was looking to expand its dock to provided additional commercial space. Recently, a new refrigeration system was installed at the dock. Presently, the Southern CT Fishermen and Lobstermen Association leases the dock. Ms. Balcom indicated that she would send Apex additional information on CT commercial fishing via email.

Ms. Balcom indicated that dredging needs were not a high priority for the commercial fishing industry but that increased harbor depths and dockage would allow more and larger fishing vessels easier access to the harbors and that cost and delays associated with pier and dredge permitting, implementation and spoils would adversely affect commercial fishing.

INTEROFFICE MEMORANDUM

TO: FILE

FROM: WILLIAM DROUIN

SUBJECT: CMC ECONOMIC EVALUATION TELEPHONE INTERVIEW: PAM ROELFS AND TOM DUGUAY (UCONN)

DATE: 10/12/09 (9:35 PM – 10:10 PM) - 10/14/09 (10:20 PM – 10:45 PM)

CC: DAVID M. LIS

Apex spoke with Ms. Pam Roelfs, Director, Office of Institutional Research Division of Enrollment Planning, Management, and Institutional Research at the University of Connecticut 860-486-4240 on October 12, 2009 and Mr. Tom Duguay ((860) 405-9025), Financial Officer, UCONN Avery Point (1084 Shennecossett Road, Groton, CT 06340-6097) on October 14, 2009 related to the Connecticut Maritime Coalition (CMC) Economic Impact Study (EIS). This memo documents the information obtained from Ms. Roelfs and Mr. Duguay during the telephone interview.

Ms. Roelfs provided specific data related to the level of employment (teacher employment) and student enrollment information while Mr. Duguay was instrumental in providing information on operating budgets. The interviewees stated that the school didn't really need dredging at their docks, however they did stress the issue of education and skills training related to the health and future of the maritime industry.

Both Ms. Roelfs and Mr. Duguay believe that a strong maritime economy can only benefit the UCONN Avery Point School by providing sustainable job growth in the maritime community and enhance UCONN's mission to prepare and educate a workforce to fill new job openings in the Maritime environment.

The information was provided by the two UCONN interviewees:

Total Budget of:	$ 7.5 million
Budget Breakdown:	$ 2 million annually from federal granting agencies such as NSF, NIH, NOAA, Sea Grant, and ONR.
Total Number of Teachers:	13 (marine sciences) 11 tenured
Total Number of Students:	700 undergrad; 45-50 grad -- 750 total
Total number of Buildings	12 buildings on campus

INTEROFFICE MEMORANDUM

TO: FILE

FROM: DAVID LIS

SUBJECT: CMC ECONOMIC EVALUATION INTERVIEW: RICHARD WARREN (FACILITIES ADMINISTRATOR, O&G INDUSTRIES)

DATE: 03/18/09 (2:00 PM – 3:30 PM)

CC:

Apex spoke with Mr. Richard Warren, Facilities Administrator for O&G Industries on March 18, 2009 related to the Connecticut Maritime Coalition (CMC) Economic Impact Study (EIS). This memo documents the information obtained from Mr. Warren during the on-site interview at his Bridgeport CT office.

O&G operates six facilities here in Connecticut, three facilities located in Stamford, one in Norwalk, and two in Bridgeport. O&G provides asphalt and concrete products for the construction industry. Raw materials such as sand and stone (aggregate) are brought in via water borne barges. O&G has approximately 900 full time employees involved in handling, processing and trucking asphalt and concrete products.

1. **How does reduced or limited water depth at CT deepwater ports (channel, basins, piers) affect shipping, fishing, ferry service, recreation or other maritime business activity?**

Mr. Warren indicated that lack of dredging could result in significant reduction in business. In particular, silting in of bulkheads would reduce the ability to bring in barges and limit shipping activities to timing with tidal cycles. This condition would result in a 30% reduction in activity. Presently, existing bulkhead maintenance dredging has been conducted via COPs but timing and limitations on depth significantly increase cost due to mobilization fees which can account for as much as 20% of the costs. COP dredge limits are presently -11 in Stamford and Norwalk. O&G has requested -18 in Bridgeport. Mr. Warren indicated that stormwater drainage from municipal systems was negatively impacting his operation due to sediment loading in stormwater runoff. Mr. Warren indicated that municipalities needed to do a better job in managing these systems such that they would not continue to exacerbate dredging needs.

2. **How would dredging improve economic conditions, and what other infrastructure improvements would be needed to support maritime business expansion/growth? How would business benefit from development of Brownfield sites in the port area? Do you know of any federal or state funding for remediation/reuse plans of contaminated sites in the port area?**

Mr. Warren indicated that expansion of existing bulkheads would have a significant beneficial effect on his business. Increased bulkheads would result in a 5 to 10 % increase in business. Further, by being able to accommodate additional barges or larger barges, O&G could more effectively manage and time commodity purchases of raw materials and increase throughput at the facilities. Presently, Mr. Warren estimated that approximately 320 24-ton trucks are off the road based on water borne shipping use at his Stamford facilities alone. This number could increase significantly if enhanced dredging was available. Brownfield sites, presently do not represent an opportunity for O&G, however, this could change in the future.

3. **What are regional or state market trends, economic factors influencing maritime industry over the next five years, and what are attributes/attractions in terms of retaining or capturing market opportunities?**

Mr. Warren indicated public policy initiatives to provide for pedestrian waterfront access and pressures for zoning changes from industrial/commercial were making it increasingly difficult to operate, maintain and expand O&G business. He indicated that public policy needed to reflect the importance of the working ports and reducing/eliminating non industrial/commercial encroachment.

INTEROFFICE MEMORANDUM

TO: FILE

FROM: DAVID LIS

SUBJECT: CMC ECONOMIC EVALUATION INTERVIEW: ROBERT SCINTO (BRIDGEPORT PORT AUTHORITY) AND PETER HOLECZ (BRIDGEPORT HARBOR COMMISSION)

DATE: 1/26/09(2:00 PM – 3:30 PM)

CC:

Apex spoke with Mr. Peter Holecz, Chairman of the Bridgeport Harbor Commission and Mr. Robert Scinto, Sr., Harbormaster for the Bridgeport Port Authority on January 26, 2009 at the offices of the Bridgeport Port Authority in Bridgeport, CT. The interview was related to the Connecticut Maritime Coalition (CMC) Economic Impact Study (EIS). This memo documents the information obtained from Mr. Holecz and Mr. Scinto during the onsite interview.

The Bridgeport Harbor Commission is active in protecting and promoting the effective use of our very important natural resource the ports and harbors of Connecticut. A key responsibility of the Commission is to prepare and maintain a harbor management plan for the harbor in accordance with Section 22a-113m through 22a-113o of the Connecticut General Statutes. The Bridgeport Port Authority was created in 1993 by City ordinance and State Statute. The Bridgeport Port Authority's mission is to promote trade and commerce, and develop and promote port facilities within the Port District. Its functions include providing secure docks, terminals and structures for passengers, customers, workers and users of Bridgeport Port Authority owned facilities, in accordance with the standards of the Coast Guard Maritime Security ("MARSEC") guidelines, promoting global trade and transportation to and from the Port of Bridgeport., and encouraging new development initiatives for the Ports of Bridgeport which stimulate job growth and tax revenues.

How does reduced or limited water depth at CT ports (channel, basins, piers) affect shipping, fishing, ferry service, recreation or other maritime business activity?

Mr. Scinto indicated that the Port of Bridgeport is located in the heart of the most densely populated region in the United States (tri-state area), and provides an accessible and non-congested gateway to the entire Northeast. The BPA is committed to serving the needs of the local, regional and global business community and to passengers seeking alternative means of transportation from Connecticut to other points along the east coast. Both Mr. Scinto and Mr. Holecz indicated that the lack of dredging was negatively impacting the port's ability to maintain and expand services and that protecting the waterfront should be a primary concern for the long term economic and environmental health of the state and region. It was indicated that main channel dredging activities were in the works including the potential for a dredge spoils disposal location. However, the process has been long and difficult.

Mr. Scinto and Mr. Holecz indicated that the general lack of dredging beyond the -27 to-28 foot depths and the uncertainty and predictability of dredging was a factor in Turbana's (port tenant) decision not to continue its presence in the port.

How would dredging improve economic conditions, and what other infrastructure improvements would be needed to support maritime business expansion/growth? How would business benefit from development of Brownfield sites in the port area? Do you know of any federal or state funding for remediation/reuse plans of contaminated sites in the port area?

Mr. Scinto and Mr. Holecz indicated that dredging and infrastructure improvements would provide an opportunity to stabilize and potential expand business opportunities for the port. The concepts of feeder barge and short sea shipping, and development of comprehensive goods distribution centers at the port were mentioned. These concepts would be beneficial to both the local and regional economy and would provide a benefit to reducing traffic congestion by reducing the number of trucks traveling the NJ/NY/CT corridor. It was estimated that a feeder barge service initially might serve 3 to 4 barges a day and that direct revenues for tug and barge services could be expected to be as much as $20,000 per day. A roll on/roll off service was selected in 2004/2005 timeframe and wheeled service had been looked at but was determined, at the time to be too expensive. Mr. Scinto and Mr. Holecz also mentioned potential plans for expansion of the bulkhead at the Direktor Shipyard and a recommendation to purchase the Silco Terminal and give it to the Bridgeport Port Authority.

What are regional or state market trends, economic factors influencing maritime industry over the next five years, and what are attributes/attractions in terms of retaining or capturing market opportunities?

As mentioned above, a feeder barge and short sea shipping sector could be greatly beneficial to both local and regional economics. Further, Mr. Scinto and Holecz emphasized that public policy needed to further support the short term and long term commercial use of this limited resource – once gone not to be recovered. In particular, developing public policy that emphasizes a long term vision over short term gain was critical to preserving and maximizing over the long run the great benefit that the Port of Bridgeport would provide in the expanding more regional and global economy. Finally, it was important that a dredging regimen for maintaining the Port of Bridgeport that is cost effective and predictable would be critical for this working port.

INTEROFFICE MEMORANDUM

TO: FILE

FROM: DAVID LIS

SUBJECT: CMC ECONOMIC EVALUATION TELEPHONE INTERVIEW: STAN MCMILLEN (CONNECTICUT DEPARTMENT OF ECONOMIC AND COMMUNITY DEVELOPMENT)

DATE: 11/18/098 (2:00 PM – 3:30 PM)

CC:

Apex and FXM spoke with Mr. Stan McMillen of the Connecticut Department of Economic and Community Development (DECD) on November 18, 2008 related to the Connecticut Maritime Coalition (CMC) Economic Impact Study (EIS). This memo documents the information obtained from Mr. McMillen during the telephone interview.

Mr. McMillen indicated that he and his staff were working on the State of Connecticut State Economic Strategic Plan. In accordance with section four of Public Act 07-239 the Department of Economic and Community Development (DECD) is required by July 1, 2009, and every five years thereafter, to prepare an economic strategic plan for the state. In developing this plan DECD has hosted regional forums to involve the public in the planning process. Mr. McMillen expects to provide an outline of recommendations to the Governor of Connecticut in the Spring of 2009. Mr. McMillen indicated that relative to the maritime industry several key aspects have been preliminarily identified as follow: siltation threatens major ports; underutilized in meeting present and future mass transportation needs of State and region; and lack of viable mass cargo/materials transportation connections from deep water ports to rail service.

Mr. McMillen referred to a UCONN 2006 Cultural & Tourism report which documented that the maritime industry was a major player in tourism in Connecticut and that the study had included a survey of maritime related establishments. Mr. McMillen indicated that dredging was important to the City of New London in its hopes to attract the cruise ship industry. Mr. McMillen also referred us to a CMTA survey. The CMTA represents the interests of the recreational maritime sector.

Mr. McMillen discussed the present and historic use of the New Haven port for steel industry and fuels and again identified rail service tying Connecticut's deep water ports and the inland/upland economy as a significant challenge. Mr. McMillen related a situation that due to excessive siltation of the Bridgeport harbor, large bulk ship delivery of fuel oil to Bridgeport harbor was hampered with less than one week worth of supply in storage and as a result, small barge deliveries were necessitated at greater expense. Mr. McMillen indicated that historically, significant raw steel materials were handled through the port of New Haven with a destination of the Naugatuck Valley as well as construction industry lumber. Mr. McMillen recommended that we contact Mr. Marty Toyen, Mr. Marty Triston and Mr. Tom Dubno.

INTEROFFICE MEMORANDUM

TO: FILE

FROM: DAVID LIS

SUBJECT: CMC ECONOMIC EVALUATION INTERVIEW: EDWARD HABEREK, JR. (FIRST SELECTMAN) AND WILLIAM HAASE (DIRECTOR OF PLANNING) STONINGTON, CT

DATE: 02/06/09 (2:00 PM – 3:30 PM)

CC:

Apex spoke with Mr. Edward Haberek, Jr. (First Selectman) and Mr. William Haase (Director of Planning) for the Town of Stonington, Connecticut on February 6, 2009 related to the Connecticut Maritime Coalition (CMC) Economic Impact Study (EIS). This memo documents the information obtained from Mr. Haberek and Mr. Haase during the on-site interview at the Stonington Town Hall.

Mr. Haberek and Mr. Haase indicated that the Stonington harbor/"town dock" usage included recreational and commercial fishing activities as well as tourism. They indicated that the flow of tourism was part of the area draw which included Mystic Seaport. (Referred to Mr. Peter Vermilya, Chairman of the Harbor Management Commission for more information.) .

1. **How does reduced or limited water depth at the harbor (channel, basins, piers) affect shipping, fishing, ferry service, recreation or other maritime business activity?**

Mr. Haberek and Mr. Haase indicated that the "Town" pier was in need of improvement and that recently, the landside refrigeration system was upgraded ($300,000 investment) supporting the commercial fishing industry. However, area causeway sedimentation had had a negative impact on the small marinas by limiting time of access (timing with tides). In addition, shoreline train schedules and associated water crossings had exacerbated the difficulties. Further and most significantly, regulatory fishing load restrictions had negatively impacted the commercial fishing industry and associated support services.

2. **How would dredging improve economic conditions, and what other infrastructure improvements would be needed to support maritime business expansion/growth? How would business benefit from development of Brownfield sites in the port area? Do you know of any federal or state funding for remediation/reuse plans of contaminated sites in the port area?**

Mr. Haberek and Mr. Haase indicated that harbor/pier improvements would positively affect the health of the industry in Stonington and that dredging of causeways would improve recreational use. Coupled with the plans at Mystic Seaport (potential dry-dock and bulkhead improvements) increased recreational boating and tourism would be realized. (Referred to Mr. Steve White from the Mystic Seaport Museum.)

3. **What are regional or state market trends, economic factors influencing maritime industry over the next five years, and what are attributes/attractions in terms of retaining or capturing market opportunities?**

Mr. Haberek and Mr. Haase indicated that increased marketing for tourism to area would be very beneficial coupled with growth of the Mystic Seaport because the success of tourism is so dependent on the maritime use and associated history of the area. They also indicated that infrastructure and fishing policy changes would result in potential stabilization of commercial fishing and associated local processing business.

INTEROFFICE MEMORANDUM

TO: FILE

FROM: DAVID LIS

SUBJECT: CMC ECONOMIC EVALUATION INTERVIEW: TOM DUBNO AND COY ANGELO (GATEWAY TERMINAL, NEW HAVEN HARBOR)

DATE: 11/14/098 (10:00 AM - 11:30 AM)

CC:

Apex spoke with Mr. Tom Dubno and Mr. Coy Angelo (joined the meeting later), of Gateway Terminal on November 14, 2008 related to the Connecticut Maritime Coalition (CMC) Economic Impact Study (EIS). This memo documents the information obtained from Gateway Terminal representatives during the on-site interview at their New Haven, CT office.

Gateway Terminal operates a materials handling operation in the Port of New Haven, CT. Materials are handled via barge/ship, stored/stockpiled and transported via truck at present. An updated rail line along the property on Waterfront Street was recently installed with the concept of providing rail access to the facility (additional comments on this topic – see below).

1. **How does reduced or limited water depth at CT deepwater ports (channel, basins, piers) affect shipping, fishing, ferry service, recreation or other maritime business activity?**

Mr. Dubno indicated that lack of dredging has resulted in a loss of business activity of approximately 10% and could result in further significant reduction in business if not addressed shortly. Mr. Dubno indicated that at present the majority of the New Haven Harbor main channel is approximately -35 feet while New York Harbor is typically -44 to -48 feet. In particular, New Haven Harbor was significantly redeveloped in the mid 80's with a requested depth of -40 to -44 feet. Further, the presence of electric transmission lines in the harbor channel creates additional obstacles and rock ledge at the harbor breakwater at about -35 feet has also had a negative impact on the usability of the harbor for increased business and business opportunities. The presence of the rock ledge increased the angle at which ships enter the harbor and effectively reduces the size of ship that can enter. There have been repeated requests to "blast out" the rock ledge so that access to the port can be improved.

Mr. Dubno also indicated that the preparation of the DMMP for the Long Island Sound was underway by the Army Corp. Mr. Dubno noted that the costs associated with dredging and in particular, availability of cover material and associated costs were complicating dredging issues.

2. **How would dredging improve economic conditions, and what other infrastructure improvements would be needed to support maritime business expansion/growth? How would business benefit from development of Brownfield sites in the port area? Do you know of any federal or state funding for remediation/reuse plans of contaminated sites in the port area?**

Mr. Dubno indicated that dredging and channel improvements as discussed above could result in a 30% expansion in business in the New Haven Harbor. Mr. Dubno also indicated that rail line recently installed along Waterfront Street was far from optimum in its configuration for his company's maximum utilization. He indicated that his docks/business could benefit from rail service but that the present configuration (turn radii) was inappropriate for his use. Mr. Dubno also indicated that additional material storage/laydown areas

would be of great use and could include various Brownfield properties located in the New Haven area. Mr. Dubno indicated that Q bridge reconstruction was a significant issue in that its proposed highway/road access configuration was less than ideal. Further, rail development, for example, along East Street and Chapel, on land currently owned by a gas company (Brownfield), could be very advantageous to growth opportunities.

3. **What are regional or state market trends, economic factors influencing maritime industry over the next five years, and what are attributes/attractions in terms of retaining or capturing market opportunities?**

Mr. Dubno indicated that C&D was a real opportunity that could take advantage of improved barge traffic and rail service. This opportunity was a result of the confluence of solid waste management and long term transportation needs and associated removal/reduction of highway/road truck traffic. However, Mr. Dubno indicated that C&D management lacked local city support, and in particular the waterborne transportation aspect. Mr. Dubno also reflected on the need for public policy approaches that reflected the importance of the working ports and reducing/eliminating non industrial/commercial encroachment and streamlined dredge/pier maintenance, repair and expansion permitting.

INTEROFFICE MEMORANDUM

TO: FILE

FROM: DAVID LIS

SUBJECT: CMC ECONOMIC EVALUATION TELEPHONE INTERVIEW: MIKE KEEGAN (USCOE)

DATE: 02/09/09 (2:30 PM – 3:00 PM)

CC:

Apex and FXM spoke with Mr. Mike Keegan, representative of the United States Army Corp, on February 9, 2009 related to the Connecticut Maritime Coalition (CMC) Economic Impact Study (EIS). This memo documents the information obtained from Mr. Keegan during the telephone interview.

Mr. Keegan indicated that the USCOE is presently preparing a draft Dredge Needs report. The report will incorporate responses to a survey sent out to the maritime industry. According to Mr. Keegan, the average response rate across all maritime sectors is approximately 60% with several sectors having a significantly stronger response rate. Apex indicated that information was of importance to the CMC EIS in that the Dredge Needs survey had elicited a comprehensive response to infrastructure/dredge needs here in Connecticut. Mr. Keegan indicated that a draft and final EIS, circa 2003-2004, prepared by the USCOE contained significant economic data and statistics (economic survey component) that might be of use to Apex and FXM. The information was provided in the EIS text with significant detail provided in several appendices to the document. Mr. Keegan indicated that he would forward these sections to Apex and FXM. Mr. Keegan indicated that a draft of the Dredge Needs report was expected from the USCOE vendor in approximately two weeks.

INTEROFFICE MEMORANDUM

TO: FILE

FROM: BILL DROUIN

SUBJECT: CMC ECONOMIC EVALUATION TELEPHONE INTERVIEW: CHRIS FREEMAN (MYSTIC SEAPORT)

DATE: 03/19/09 (11:13 AM – 11:32 AM)

CC: DAVID LIS

I spoke with Mr. Chris Freeman, Campaign Officer, Development Department for the Mystic Seaport on March 19, 2009 related to the Connecticut Maritime Coalition (CMC) Economic Impact Study (EIS). This memo documents the information obtained from Mr. Freeman during the telephone interview.

The Mystic Seaport is one of the top twenty employers in Southern Connecticut. The Seaport draws over 300,000 visitors per year and employees over 19,000 individuals. Mystic Seaport is not only the "Museum of America and the Sea" the nation's leading maritime museum, but it is also an educational campus / facility, a shipyard and transient marina business.

Improving the economic conditions at the Mystic Seaport are varied and include the following four issues:

- Widening Interstate 95 (increase traffic flow and avoid congestion),
- Extend railroad commuter service from New London to Mystic (Shoreline East)
- Increase intermodal transportation from area airports
- Continue maintenance dredging in the Mystic River to a 13 foot depth.

1. **How does reduced or limited water depth at CT deepwater ports (channel, basins, piers) affect shipping, fishing, ferry service, recreation or other maritime business activity?**

Mr. Freeman stated that there is always a need to maintain the navigational channel in the Mystic River to a depth of 13 feet. This is due to the museum ships (such as the Morgan), restoration of historic ships (such as the Amistad) and the marina business. The Seaport has its own dry dock (lift dock) located near the shipyard for repairs and restoration. Limited dredging took place near the lift dock in 2008. The Town of Mystic performed the dredging in joint partnership with the Seaport. Approximately 500 cubic yards of material was dredged.

2. **How would dredging improve economic conditions and what other infrastructure improvements are needed to support maritime business expansion/growth?**

According to Mr. Freeman, dredging in the Mystic Seaport was completed in 2008. He does not see any need to dredge or modify significant infrastructures at this time. However, he believes that improvements to infrastructure could lead to a stronger maritime community that will benefit the Mystic Sea Port by drawing more people to tourist spots along the coast line.

3. **Training Needs and Requirements**

Mr. Freeman though not directly involved in employment activities, knew of three schools that assists students in pursuing maritime careers / employment:

- The Sound School
- Eastern Connecticut Workforce Investment Board
- Marine Academy of Science & Technology (UCONN Avery Point)
- The Mystic Seaport is also an educational facility that promotes preservation of historical maritime knowledge.

INTEROFFICE MEMORANDUM

TO: FILE

FROM: BILL DROUIN

SUBJECT: CMC ECONOMIC EVALUATION TELEPHONE INTERVIEW: JOHN WRONOSKI AND RICH MCMURRY (CROSS SOUND FERRY SERVICE, INC.)

DATE: 03/5/09 (1:00 PM – 2:12 PM)

CC: DAVID LIS

David Lis and I spoke with Mr. John Wronoski and Rich McMurry (General Manager) of Cross Sound Ferry Service, Inc. (CSFS) on March 5, 2009 related to the Connecticut Maritime Coalition (CMC) Economic Impact Study (EIS). This memo documents the information obtained from Mr. Wronoski and McMurry during the telephone interview.

Discussions with CSFS personnel was related to their "other" business including a shipyard, repair and construction yard, the Thames Tow Boat Company and a (1,000 cubic yard) dredge barge company. The shipyard employees 60 employees and the Thames Tow Boat company employees 12 employees.

1. **How does reduced or limited water depth at CT deepwater ports (channel, basins, piers) affect shipping, fishing, ferry service, recreation or other maritime business activity?**

Mr. Wronoski and McMurry stated that the ferry business was not appreciably impacted by not dredging in their area and that a deep port was not an issue for their ferry service. Obviously, no dredging at all over time would affect their business.

2. **How would dredging improve economic conditions for the New London port, and what other infrastructure improvements would be needed to support maritime business expansion/growth?**

Mr. Wronoski and McMurry stated that the ferry business was not appreciably impacted by not dredging in their area and that a deep port was not an issue for their ferry service. Obviously, no dredging at all over time would affect their business. However, they were interested in infrastructure changes including increasing parking areas at their tie-downs, replacing or re-building 160 feet of bulkhead at the New London docks, and a new tie-down area for their high speed ferry boat.

3. **What are regional or state market trends, economic factors influencing maritime industry over the next five years, and what are attributes/attractions of the New London port in terms of retaining or capturing market opportunities?**

Mr. Wronoski and McMurry stated that a State of Connecticut subsidy for truck traffic use of ferries would decrease the amount of truck traffic that I-95 would experience. The ferry business peaked in 2004 and since the cost of operations (fuel cost specifically) went up, ferry traffic has decreased.

Mr. Wronoski and McMurry stated that they would like to see an Industrial Revenue Bond (IRB) or other tax-free bond would be used to re-power their shipping (ferry) fleet to be more cost-effective.

4. **Would the Ferry business benefit from development of Brownfield sites in the port area? Do you know of any federal or state funding for remediation/reuse plans of contaminated sites in the port area?**

Mr. Wronoski and McMurry were interested in the development of the New London Intermodal transportation initiative that could provide easier access to their ferry business and would decrease their need for automotive parking.

When asked if there were any available reports, studies or other documentation of port business activity, port calls, vessel profiles, infrastructure needs, or other issues affecting business operations or expansion plans, they stated that would discuss these issues at a later date. An interview appointment was set-up with Mr. Wronoski and McMurry for Tuesday, March 10, 2009 at 11:00am to discuss revenue and their other businesses.

5. **How does CSFS find new employees? What type of employees are needed at CSFS? Where does CSFS find new employees?**

CSFS promotes / advances employees from within the company. CSFS stated that there was very little employee turnover and except for a few positions such as civil or mechanical engineers, most employees are promoted from within Employees who go to seminars and conference are generally reimbursed by CSFS.

INTEROFFICE MEMORANDUM

TO: FILE

FROM: BILL DROUIN

SUBJECT: CMC ECONOMIC EVALUATION TELEPHONE INTERVIEW: ADAM WRONOSKI, STAN MICKUS AND RICH MCMURRY (CROSS SOUND FERRY SERVICE, INC.)

DATE: 03/10/09 (1:30 PM – 2:20 PM)

CC: DAVID LIS

Ms. Jacqueline Hallsmith (FXM) and I spoke with Mr. Adam Wronoski (son of John Wronoski (CEO)), Stan Mickus and Rich McMurry (General Manager) of Cross Sound Ferry Service, Inc. (CSFS) on March 10, 2009 related to the Connecticut Maritime Coalition (CMC) Economic Impact Study (EIS). This memo documents the information obtained from Mr. Wronoski, McMurry and Mickus during the telephone interview.

Discussions with CSFS personnel was related to their "other" business interests including a shipyard, repair and construction yard, the Thames Tow Boat Company and a dredge (1,000 cubic yard) barge company. The shipyard employees 60 employees and the Thames Tow Boat company employees 12 employees.

1. **How does reduced or limited water depth at CT deepwater ports (channel, basins, piers) affect shipping, fishing, ferry service, recreation or other maritime business activity?**

Mr. Wronoski and McMurry stated that the shipyard is greatly impacted by no dredging. They are one of the only shipyard / repair facilities that have large-scale dry dock capacity.

As navigable water becomes more silted in, fewer and fewer deep draft ships can be repaired at the facility. Presently, a dredge permit is pending at the shipyard's entrance channel. Dredging depth is expected to be to 16-20 feet. CSFS has already received approval from Army Corp, but are awaiting CTDEP approval which is expected to take 8-10 months.

Due to the delay, the shipyard may have lost business for repairs to a NOAA research vessel which would translate into a loss of several million dollars and potentially 30-40 employees (one shift). CSFS had also planned on providing $2 million of land-side capital improvements which is on hold and may not occur.

2. **How would dredging improve economic conditions for the New London port, and what other infrastructure improvements would be needed to support maritime business expansion/growth?**

Mr. Wronoski and McMurry stated that presently the Thames Tugboat Company has a long term charter with the Groton Sub base along with tug services for Hess Oil, State Pier, AES Cogeneration Plant, Dow Chemical plant and Gales Ferry Service. Long term dredging may spurn more dock traffic and Thames Tugboat might add another tug to their fleet increasing their business by 25-30%.

Mr. Wronoski and McMurry stated that presently they lease out a 1,000 cubic yard clamshell dredge to private owners, marinas or other customers. Increased dredging in the Long Island area would allow them to lease out the dredge equipment more frequently.

INTEROFFICE MEMORANDUM

TO: FILE

FROM: BILL DROUIN

SUBJECT: CMC ECONOMIC EVALUATION TELEPHONE INTERVIEW: DAVID SHUDA (COASTLINE TERMINALS OF CONNECTICUT)

DATE: 03/5/09 (4:03 PM – 5:08 PM)

CC: DAVID LIS

I spoke with Mr. David Shuda (President of Coastline Terminals of Connecticut (CTC)) on March 5, 2009 related to the Connecticut Maritime Coalition (CMC) Economic Impact Study (EIS). This memo documents the information obtained from Mr. Shuda during the telephone interview.

In 1996, CTC purchased facilities at the ports of New Haven and Bridgeport, making them the first 100 percent employee-owned ports in the world. Coastline has partnered with Logistec USA, a division of Montreal-based Logistec Stevedoring, to handle port operations. Coastline, whose shareholders are members of Local 1398 of the International Longshoremen's Association, provides the labor. Logistec, which has an agreement under which it leases the land and facilities from Coastline, provides logistical and management support. The two companies have worked together to promote the two ports and their capabilities. In 2002, Coastline's workforce handled approximately 1 million tons of cargo at the Port of New Haven, including steel, copper, zinc and lumber. Meanwhile, the Port of Bridgeport facility is a major import hub for bananas and clementines, as well as a center for the export of used automobiles.

1. **How does reduced or limited water depth at CT deepwater ports (channel, basins, piers) affect shipping, fishing, ferry service, recreation or other maritime business activity?**

Mr. Shuda stated that in 2008, the Turbana Company's importation operations were moved from Bridgeport to Philadelphia, Pennsylvania. Approximately 180 truckloads of product that previously arrived every week at Bridgeport via Turbana vessels are now delivered to the New England market via trucks using the congested southwest 1-95 corridor. Mr. Shuda that the move was due to the following issues:

- Shallow draft (lack of dredging)
- Lack of efficient railroad access
- Lack of "lay down" area and
- Overall working conditions at the Bridgeport dock.

Mr. Shuda also stated that the State of Pennsylvania provided bond money to the Port Authority of Philadelphia for infrastructure improvements (as well as electrical power and tax relief) as an enticement for Turbana to relocate.

Over the last four years, Mr. Shuda stated that they have lost over 85% of capacity at the Bridgeport facility from 750 – 1 million metric tons of material / year to 140 – 180 metric tons per year and employment has dropped from 175 employees to 32 employees.

2. **What are regional or state market trends, economic factors influencing maritime industry over the next five years, and what are attributes/attractions of the New London port in terms of retaining or capturing market opportunities?**

Mr. Shuda stated that deeper berths at the Bridgeport facility may allow more marketing of fruit companies, however, he felt that most "new" business might go to New Haven or New London ports where there might be deeper berths available and more "lay down" areas for products.

3. **If you were "King" of the Waterfronts" what improvements in infrastructure would you improve to retain or capture revenues and "new" market opportunities?**

Mr. Shuda reiterated the following issues for the Bridgeport facilities:

- Shallow draft (lack of dredging)
- Lack of efficient railroad access
- Lack of "lay down" area and
- Overall working conditions at the Bridgeport dock.

Mr. Shuda also added that the New London (State Pier) could use some upgrades to the pier and surrounding structures such as:

- Update / re-build refrigeration storage units
- Upgrade / install a mobile crane at the State Pier
- Upgrade railroad access and
- Increase the size of the "lay down" area

Mr. Shuda did not believe that dredging was a problem at the New London State Pier.

If these issues were resolved, Mr. Shuda thought that he could expect 40-50 new full time positions at the New London State Pier.

Mr. Shuda spoke to employee training and his present workforce requirements. At present, Mr. Shuda has no need for new employees. As stated previously, his workforce has dropped from 175 to 32 employees. When he was hiring he attracted employees by word of mouth, however, due to the Homeland Security changes since 9/11, employee require a physical, background checks and Transportation Worker Identification Credentials (TWIC) identification making employment of low wage earns difficult. Most of he workers employed at the CTC are laborers and do not require advanced degrees.

Interview Personnel Cross Reference - Michael Piscitelli and Judy Shiefele (New Haven City planning and Executive Director of Port Authority)

INTEROFFICE MEMORANDUM

TO: FILE

FROM: DAVID LIS

SUBJECT: CMC ECONOMIC EVALUATION TELEPHONE INTERVIEW: JOE SALVATORE (CTDOT DREDGING COORDINATOR)

DATE: 11/04/08 (2:00 PM – 3:00 PM)

CC:

Apex spoke with Mr. Joe Salvatore, Dredging Coordinator for the CTDOT on November 4, 2008 related to the Connecticut Maritime Coalition (CMC) Economic Impact Study (EIS). This memo documents the information obtained from Mr. Salvatore during the telephone interview.

1. **How does reduced or limited water depth at CT deepwater ports (channel, basins, piers) affect shipping, fishing, ferry service, recreation or other maritime business activity?**

Mr. Salvatore indicated that lack of dredging and dredging at less than optimal depths negatively impacts the maritime industry. For example, Bridgeport cannot presently accept modern large draft shipping. Bridgeport is presently between -22 to -24 but could be positively affected if depth of -30 could be attained and the State Pier in New London is presently -26 to -28 but could benefit from -32. One-half of Norwalk harbor was dredged about four years ago under Phase I but due to budget constraints not completed. The dredging, although incomplete, resulted in increased barge traffic. Mr. Salvatore indicated that the Army Corp of Engineers was conducting a dredge needs study and that we should contact Mr. Mike Keegan.

2. **How would dredging improve economic conditions, and what other infrastructure improvements would be needed to support maritime business expansion/growth? How would business benefit from development of Brownfield sites in the port area? Do you know of any federal or state funding for remediation/reuse plans of contaminated sites in the port area?**

As provided above, Mr. Salvatore indicated that he believed that dredging would have a beneficial affect on the maritime industry and CT economy as a whole. Mr. Salvatore indicated that beyond dredging, increased rail service/access to the ports would be of significant benefit. For example, at present, no rail service is available to the Bridgeport harbor. In addition, and relevant to Brownfield sites, increased access to laydown areas immediately adjacent or inland would also be of significant benefit. The New London rail line runs north into Central Vermont but the New London port would benefit from increased laydown areas including "inland" storage areas as far as 20 to 30 miles from the harbor. Mr. Salvatore also indicated that present coastal zone regulatory framework makes it very difficult to expand and upgrade bulkheads/landing areas. .

3. **What are regional or state market trends, economic factors influencing maritime industry over the next five years, and what are attributes/attractions in terms of retaining or capturing market opportunities?**

Mr. Salvatore identified feeder barge services as potential opportunity for the maritime industry in Connecticut. In addition, between increase rail service and feeder barge service, the potential for a lessening of dependence on trucking and reduction in the increase in highway congestion might be realized. Opportunities such as these could be explored by a state-wide freight study. In addition, an ongoing state

wide priorities evaluation and listing and full implementation of the harbor improvement fund would help develop and implement programs that maximize the benefit to the maritime industry and state economy.

INTEROFFICE MEMORANDUM

TO: FILE

FROM: BILL DROUIN

SUBJECT: CMC ECONOMIC EVALUATION TELEPHONE INTERVIEW: HELEN ROSENBERG (NEW HAVEN OFFICE OF ECONOMIC DEVELOPMENT)

DATE: 02/20/09

CC: DAVID LIS

I spoke with Ms. Helen Rosenberg (New Haven Office of Economic Development) on February 20, 2009 related to the Connecticut Maritime Coalition (CMC) Economic Impact Study (EIS). This memo documents the information obtained from Ms. Rosenberg during the telephone interview.

1. **How does reduced or limited water depth at CT deepwater ports (channel, basins, piers) affect shipping, fishing, ferry service, recreation or other maritime business activity?**

Ms. Rosenberg stated that she has seen a drop off of maritime business in recent years, however when queried about specific customers, jobs, sales, efficiency of business operations, she stated that she did not have specific "dollar" or "labor" data and that we should speak with Ms. Judy Sheifele or Donna Hall at (203) 946-7842.

When asked if there were any available reports, studies or other documentation of port business activity, port calls, vessel profiles, infrastructure needs, or other issues affecting business operations or expansion plans, she stated that revenue numbers for maritime industries for the city were not available, but that they may be available from the State of Connecticut. A harbor plan was provided to the public on their website (subsequently downloaded).

2. **How would dredging improve economic conditions for the New Haven port, and what other infrastructure improvements would be needed to support maritime business expansion/growth?**

Ms. Rosenberg stated that she did not have any specific information related to dredging improving economic climate in New Haven; however she said that increased depth may help with terminal operations.

3. **What are regional or state market trends, economic factors influencing maritime industry over the next five years, and what are attributes/attractions of the New Haven ports in terms of retaining or capturing market opportunities?**

Ms. Rosenberg stated that she did not have any specific information related to regional or state market trends.

4. **What improves to the New Haven Harbor infrastructure would help the maritime industry economy?**

Ms. Rosenberg stated that she did not have any specific infrastructure changes that would help the maritime industry economy. She recommended that I speak with "someone" in the Chamber of Commerce (no contact person given) and /or Mr. Mike Piscitelli (New Haven City planning Department).

5. **Are there Brownfield sites in the port area, federal or state funding for remediation/reuse plans of contaminated sites in the port area?**

Ms. Rosenberg stated that the development of Brownfield properties in New Haven were not necessarily maritime-based industries.

INTEROFFICE MEMORANDUM

TO: FILE

FROM: BILL DROUIN

SUBJECT: CMC ECONOMIC EVALUATION TELEPHONE INTERVIEW: JOHN MARKOWICZ (SOUTHEASTERN CONNECTICUT ENTERPRISE REGION)

DATE: 03/19/09 (10:07 AM – 10:50 AM)

CC: DAVID LIS

I spoke with Mr. John Markowicz, the Executive Director of the Southeastern Connecticut Enterprise Region (SECTER) on March 19, 2009 related to the Connecticut Maritime Coalition (CMC) Economic Impact Study (EIS). This memo documents the information obtained from Mr. Markowicz during the telephone interview.

SECTER is a 501C3 Non-profit public-private regional economic development agency serving the town of New London County Connecticut. SECTER's mission is to promote and preserve the region's attractiveness, to encourage new businesses, and to assist and to nurture existing and expanding local enterprises.

The SECTER has identified six industry groups or clusters that are important to the regional economy. Two of these clusters are water-dependant and rely on strong infrastructure to maintain and grow their economic base. The defense cluster includes the Navy Submarine Base (SUBASE) and Electric Boat's nuclear submarine manufacturing facilities. As of 2004, Electric Boat employs an estimated 8,800 people (down from over 20,000 in the 1980s) and the Navy has 10,000 servicemen and women, civilian employees, and contractors. The other major water dependant industry cluster is the maritime cluster which includes the activities of the U.S. Navy Submarine Base at Groton, maritime education and research at the UCONN Marine Sciences and Technology Center at Avery Point, the U.S. Coast Guard Academy and installations, Mystic Aquarium and Institute for Exploration, and Mystic Seaport: The Museum of America and the Sea. Cruise ship support activities include docking of the American Cruise Lines, Clipper Cruise Lines, Captain of the Port, and Holland America Lines. Also included in the maritime cluster are Electric Boat sail and maritime instrument manufacturers, regional marinas, fishing boats, and ferry services.

1. **How does reduced or limited water depth at CT deepwater ports (channel, basins, piers) affect shipping, fishing, ferry service, recreation or other maritime business activity?**

Mr. Markowicz stated that there is always a need to maintain the navigational channel depth (40 feet) for the operation of the SUBASE and Electric Boat activities. However, he believed that dredging was adequate in the New London Port.

Mr. Markowicz also stated that the access to the Fisher Island Dredge Spoil Disposal site was limited and that dredging operations occurring in the Naval areas were going to a alternative confined aquatic disposal (CAD) cell located on Naval property.

2. **How would dredging improve economic conditions and what other infrastructure improvements are needed to support maritime business expansion/growth?**

According to Mr. Markowicz, the New London port is adequately utilized and does not need any significant infrastructure modifications. One infrastructure modification that Mr. Markowicz believes would be helpful is the installation of a larger crane that could be installed on the dock to increase off-loading activities

(containers) at the State Pier. However he also understands that additional lay down areas would also need to be created to hold the additional cargo and that land use is at a premium near the pier.

3. **What are regional or state market trends, economic factors influencing maritime industry over the next five years, and what are attributes/attractions of the port in terms of retaining or capturing market opportunities?**

Mr. Markowicz noted that the State Pier is owned and was funded by the State of Connecticut (approximately $40M in upgrades) and that the pier utilization is adequate.

A regional trend is the instituting of the Maritime Security Plan which includes the installation of additional lighting, fences, video cameras and other security features. Significant contributions to the completion of this plan occurred in 2008 /2009 by the United States Coast Guard.

Mr. Markowicz spoke to other possible economic opportunities that may impact harbor infrastructure:

- The Broadwater Gasification System: presently under appeal, but may ultimately fail to materialize.
- The Amtrak railroad system acquired $100M to replace the Niantic / Thames River Bridge which could increase commerce in the southeastern portion of Connecticut.
- The State of Connecticut is reviewing a railroad commuter service subsidy from Old Saybrook to New London (Shoreline East).

4. **Are there available reports, studies or other documentation of port business activity, port calls, vessel profiles, infrastructure needs, or other issues affecting business operations or expansion plans?**

Mr. Markowicz directed me to the SECTER website http://www.secter.org/ for a Mission Statement and some reports and documentation of Eastern Connecticut economic issues.

5. **Have any terminals, port businesses left due to limited water depth or other infrastructure concerns?**

Mr. Markowicz stated that there no industries / business that he knew of that have left directly because of dredging.

6. **Training Needs and Requirements**

Mr. Markowicz that although the SECTER is not directly involved in employment activities, he knew of three schools that assists students in pursuing maritime careers / employment:

- The Sound School
- Eastern Connecticut Workforce Investment Board
- Marine Academy of Science & Technology (UCONN Avery Point)

Both the Eastern Connecticut Workforce Investment Board and the Marine Academy of Science & Technology (UCONN Avery Point) assist students in placement at the General Dynamic's Electric Boat facility.

INTEROFFICE MEMORANDUM

TO: FILE

FROM: BILL DROUIN

SUBJECT: CMC ECONOMIC EVALUATION TELEPHONE INTERVIEW: MARTIN TRISTINE (PAST CEO LOGISTEC)

DATE: 03/10/09 (9:26 AM – 10:15 AM)

CC: DAVID LIS

I spoke with Mr. Martin Tristine Past CEO of Logistec USA on February 27, 2009 related to the Connecticut Maritime Coalition (CMC) Economic Impact Study (EIS). Logistec provides cargo-handling services to the marine and industrial sectors. Its core business is stevedoring, the loading and unloading of ships using specialized equipment and experienced personnel. Logistec operates terminals out of New London, New Haven and Bridgeport Ports, warehousing cargo while in transit to and from intermodal connections, including the loading and unloading of trucks and railway cars. The Company is one of the largest cargo-handling companies on Canada's East Coast and a growing player on the U.S. East Coast.

This memo documents the information obtained from Mr. Tristine during the telephone interview.

1. **How does reduced or limited water depth at CT deepwater ports (channel, basins, piers) affect shipping, fishing, ferry service, recreation or other maritime business activity?**

Mr. Tristine stated that the lack of dredging in the Bridgeport Port was the "major" reason that the Turbano Fruit Company left Bridgeport. Other issues related to the move for Turbano was lack of cooperation with the State of Connecticut in terms of tax relief and lack of "efficient" transportation from the harbor area to local grocery stores. He also stated that there was a lack of refrigerated storage warehousing for the produce off-loaded

Mr. Tristine also stated that lack of coordination with the Connecticut Department of Environmental Protection (CTDEP) on issues such as the dredge permitting, disposal of dredge spoils and lack of adequate disposal areas made it difficult to dredge. He also stated that the Connecticut Department of Transportation (CTDOT) never put enough emphasis on maritime industries.

Mr. Tristine also commented that an electrical power cable was laid in the middle of the New Haven Harbor and it maybe at a depth where deep water dredging may not be possible.

2. **How would dredging improve economic conditions for the CT Deep water ports, and what other infrastructure improvements would be needed to support maritime business expansion/growth?**

Mr. Tristine stated that dredging would help in bringing new business such as the container feeder barge of break bulk materials in New Haven and Bridgeport, but there is a need for additional berthing docks and heavier cranes to lift the containers and some kind of infrastructure such as railroad to move the containers.

3. **How would business benefit from development of Brownfield sites in the port areas? Do you know of any federal or state funding for remediation/reuse plans of contaminated sites in the port area?**

Mr. Tristine believes that development of the waterfront for maritime industries is important in those port areas were storage, lay down and warehousing is in short supply.

4. **What are regional or state market trends, economic factors influencing maritime industry over the next five years, and what are attributes/attractions of the port areas in terms of retaining or capturing market opportunities?**

Mr. Tristine stated that cooperation was needed between the State of Connecticut, City governments (New Haven, Bridgeport and New London), and Terminal owners to make the maritime industry climate (specifically the fruit business) easier to survive in.

5. **How did Logistec find new employees? What type of employees were needed by Logistec? How did Logistec find new employees?**

Logistec promotes / advances employees from within the company. Logistec stated that employees were "transient" and most of their employees were hired by "word of mouth". He stated that after 9/11, it was difficult to acquire "transient" workers due to security requirements such as TWIC. Logistec did not employee many higher skilled employees.

6. **Are there available reports, studies or other documentation of port business activity, port calls, vessel profiles, infrastructure needs, or other issues affecting business operations or expansion plans?**

Mr. Tristine recommended that I research the National Association of Waterfront Employers (NAWE) website. NAWE is the voice of the U.S. marine terminal operator (MTO) and Stevedoring industry in Washington, D.C. NAWE promotes marine cargo efficiency, security, safety and health, a clean environment, international trade and economic growth through advocacy, education and industry cooperation.

INTEROFFICE MEMORANDUM

TO: FILE

FROM: BILL DROUIN

SUBJECT: CMC ECONOMIC EVALUATION TELEPHONE INTERVIEW: MICHAEL PISCITELLI AND JUDY SHIEFELE (NEW HAVEN CITY PLANNING AND EXECUTIVE DIRECTOR OF PORT AUTHORITY)

DATE: 03/9/09 (10:07 AM – 10:50 AM)

CC: DAVID LIS

I spoke with Mr. Michael Piscitelli (City of New Haven City Planning Department) and Judy Shiefele (Executive of New Haven Port Authority) on March 9, 2009 related to the Connecticut Maritime Coalition (CMC) Economic Impact Study (EIS). This memo documents the information obtained from Mr. Piscitelli and Ms. Shiefele during the telephone interview.

According to Mr. Piscitelli and Ms. Shiefele, New Haven is the largest deepwater port in Connecticut, the highest volume port on Long Island Sound and it is predominately a "liquid" port that takes on petroleum products such as fuel oil, gasoline and diesel fuels. The major businesses at the New Haven port are Gateway Terminal; Getty Terminal; Gulf Terminal; Magellan Terminal; New Haven Terminal (including Coastline Terminal Facility, operated by Logistic, Inc.); Motiva Enterprises; R&H Terminal and PSEG Harbor Station.

1. **How does reduced or limited water depth at CT deepwater ports (channel, basins, piers) affect shipping, fishing, ferry service, recreation or other maritime business activity?**

Mr. Piscitelli and Ms. Shiefele stated that dredging operations by the Army Corp are proceeding with an interim maintenance dredging project in the harbor channel to 42 feet. They stated that dredging operations that are occurring along the west side of the harbor could provide additional commercial anchorage and increase business in the port. Additional dredging needs to occur in the northern portion of the harbor where a biodiesel company is slated to open. At this time, the City of New Haven is awaiting dredge permits and funding to complete.

New Haven anticipates re-instituting the rail system that is located in the North Yard and waterfront areas for intermodal transportation.

Mr. Piscitelli and Ms. Shiefele stated that two businesses were being impacted by "no" dredging: an RO/RO automotive company that ships automobiles to South America and West Africa and the PSEG power plant that receives coal from barges.

2. **Training Needs and Requirements**

The City of New Haven does not employee maritime employee so they had no comment related to training and staffing needs.

Interview Personnel Cross Reference – David Shuda (President of Coastline)

INTEROFFICE MEMORANDUM

TO: FILE

FROM: BILL DROUIN

SUBJECT: CMC ECONOMIC EVALUATION TELEPHONE INTERVIEW: RICK KRAL (BEACON POINT MARINA)

DATE: 03/11/09 (11:578 AM – 11:42 PM)

CC: DAVID LIS

I spoke with Mr. Rick Kral (CEO) of Beacon Point Marina (BPM) on March 11, 2009 related to the Connecticut Maritime Coalition (CMC) Economic Impact Study (EIS). This memo documents the information obtained from Mr. Kral during the telephone interview.

BPM is a recreational marina company that has a marinas (Cos Cob, Shelton, and Westbrook) and supply approximately 300 recreational boat slips (250 Cos Cob / 50 Shelton) in Connecticut. BPM is a full service boating company that provides summer boating slips and winter storage, mechanical and yard services, new boat sales and service.

1. **How does reduced or limited water depth at CT deepwater ports (channel, basins, piers) affect shipping, fishing, ferry service, recreation or other maritime business activity?**

Mr. Kral stated that although most recreational boats are not deep draft, periodic dredging is required to provide access to the PBM's marinas. Most of the required dredging is maintenance dredging of navigational channels, however, some localized dredging is required periodically. The Mianus River channel had not been dredged in 23 years and is need of dredging soon. If dredging is not performed, the marina will be closed because boats can't make it to the marina from Long Island Sound. Mr. Kral did not have any revenue information to impart to me related to potential loss of business.

2. **What are regional or state market trends, economic factors influencing maritime industry over the next five years, and what are attributes/attractions of the New London port in terms of retaining or capturing market opportunities?**

Mr. Kral feels that the marina business was "fractured" and the State of Connecticut (specifically CTDEP and Connecticut Revenue Service) did not offer any assistance and was un-supportive when assistance was requested. CTDEP and CTDOT maintained heavy regulatory burdens on the marine industries. Mr. Kral also stated that the Connecticut Tax Code was complicated and restrictive toward the recreational boating community so many boaters were moving to Rhode Island where a more "boating friendly" atmosphere exists.

Mr. Kral spoke to the need for advanced marine mechanical labor force and that he places ads in trade magazines and newspaper want ads. His needs are focused on certified marine mechanical technicians. Personnel are promotions from within.

INTEROFFICE MEMORANDUM

TO: FILE

FROM: BILL DROUIN

SUBJECT: CMC ECONOMIC EVALUATION TELEPHONE INTERVIEW: RIVES POTTS (BREWER YACHT YARDS)

DATE: 03/12/09 (2:37 PM – 3:10 PM)

CC: DAVID LIS

David Lis and I spoke with Mr. Rives Potts (CEO) of Brewer Yacht Yards (BYY) on March 5, 2009 related to the Connecticut Maritime Coalition (CMC) Economic Impact Study (EIS). This memo documents the information obtained from Mr. Potts during the telephone interview.

BYY is a recreational marina company that has approximately 12 marinas over an 8 town area (one-Stamford, one-Stratford, two-Branford, three-Westbrook, two-Essex, one-Deep River, one-Saybrook and one- Mystic) and supply approximately 95% of the recreational boat slips (with 863 seasonal slips) in Connecticut. BYY is a full service boating company that provides summer boating slips and winter storage and service. BYY employs approximately 120 employees.

1. **How does reduced or limited water depth at CT deepwater ports (channel, basins, piers) affect shipping, fishing, ferry service, recreation or other maritime business activity?**

Mr. Potts stated that although most recreational boats are not deep draft, periodic dredging is required to provide access to the Brewer's marinas. Historically, small dredging projects were relatively simple process and a 10-year permit could cost as much as $5 - 600.00. Now, based on increased analytical (sediment analyses) costs, shortened permit period (3 years) and the time required to acquire a permit, a permit to dredge could cost as much as $51,000. Mr. Potts stated that the cost to dispose of dredge materials has also gone up from $7 yd^3 to $ 16 yd^3.

Mr. Potts estimates that as much as $5 million has been lost over the last 5 years due directly to lack of dredging over a five year period. He also estimates that approximately 40 jobs have been lost. He also stated that if dredging is not performed in the federal channel, he could lose (close) some of his facilities that rely on the federal navigational channels as a route of access.

2. **How would dredging improve economic conditions for the deepwater ports, and what other infrastructure improvements would be needed to support maritime business expansion/growth?**

Mr. Potts stated that the ferry business was not appreciably impacted by not dredging in their area and that a deep port was not an issue for their ferry service. Obviously, no dredging at all over time would affect their business. However, they were interested in infrastructure changes including increasing parking areas at their tie-downs, replacing or re-building 160 feet of bulkhead at the New London docks, and a new tie-down area for their high speed ferry boat.

3. **What are regional or state market trends, economic factors influencing maritime industry over the next five years, and what are attributes/attractions of the New London port in terms of retaining or capturing market opportunities?**

Mr. Potts feels that the State of Connecticut (specifically CTDEP and Connecticut Revenue Service) are "against" maritime businesses such as the Brewer's Yacht Yard and others. Specifically, he cited the CTDEP Coastal Area Management (CAM) Plan which was states that the plan was initiated to assist in the development of shoreline areas, however, CTDEP seems to "put up roadblocks" to dredging and dock repair. Rives also stated that the Connecticut Tax Code is complicated and restrictive toward the recreational boating community so many boaters move to Rhode Island where a more "boating friendly" atmosphere exists. Rives stated that Rhode Island offered a Tax Rebate Incentive for boaters.

He stated that employees of his brokerage firm historically had been comprised of independent contractors (excluding managerial staff). However, now the Department of Revenue Services considers them "employees" of the brokerage firm and it is the responsibility of the firm to pay labor taxes and other fringe benefits.

Overall, Mr. Potts believes that if dredging availability and costs and a more "boating friendly" atmosphere toward taxation were to exists, he could expand his business 10-50% and he could hire 40 more people.

Mr. Potts requested that we re-schedule a meeting for follow-up questions and comments.

INTEROFFICE MEMORANDUM

TO: FILE

FROM: BILL DROUIN

SUBJECT: CMC ECONOMIC EVALUATION TELEPHONE INTERVIEW: JACK CONLON (STAMFORD CHAMBER OF COMMERCE)

DATE: 03/09/09 (1:10 PM – 1:46 PM)

CC: DAVID LIS

I spoke with Mr. Jack Conlon of the Stamford Chamber of Commerce on March 2, 2009 related to the Connecticut Maritime Coalition (CMC) Economic Impact Study (EIS). This memo documents the information obtained from Mr. Conlon during the telephone interview.

1. **How does reduced or limited water depth at CT deepwater ports (channel, basins, piers) affect shipping, fishing, ferry service, recreation or other maritime business activity?**

Mr. Conlon stated that the Stamford Harbor had a need for deep draft businesses including sand and gravel companies and automotive / scrap metal dealers that operate in the Stamford Harbor. Specific concerns with dredging are the challenges faced by these industries to move boats within small channelized areas during tidal changes. O&G on the west branch harbor (Rippowam River) moves barges with reclaimed road materials, gravel and sand to their Stamford Recycling plant. However, dredging hadn't occurred in the Stamford Harbor in over 20 years making it difficult to traverse the harbor. Dredging may be needed soon to keep the channel open for deeper draft boats. As a side line, City planners are deciding to remove the dam on the Rippowam River which may increase the siltation of the upper Stamford harbor limiting ship building / repair and limited ship size to 100 feet.

Most of the water-dependant uses of the Stanford Harbor are recreational / pleasure boating. These industries do not deep water ports to be prosperous.

2. **How would dredging improve economic conditions for the Stamford port, and what other infrastructure improvements would be needed to support maritime business expansion/growth? How would business benefit from development of Brownfield sites in the port area? Do you know of any federal or state funding for remediation/reuse plans of contaminated sites in the port area?**

Most of the water-dependant uses of the Stanford Harbor are recreational / pleasure boating. These industries do not deep water ports to be prosperous. However, some maritime ship building and shipping as describe above would be impacted without dredging.

Mr. Conlon stated that the "Antares Project" or "Gateway Harbor Point" Project is a major 7.5 acre re-development project located on the southern end of the east branch of the Stamford Harbor. This project includes re-development of the historic Pitney Bowes and the Yale & Towne properties into a 4,000 unit housing cluster with a hotel and 500,000 square feet of office space. Some of the area will be used for retail space and boardwalks and other public areas will be developed along the harbor. Public docks and marina slips will be also be developed. Dredging is not an important consideration for those properties that have or will be developed as residential and commercial properties. Over the ten year development, this project is estimated to employee over 1,000 employees.

3. **What are regional or state market trends, economic factors influencing maritime industry over the next five years, and what are attributes/attractions of the Stamford Harbor in terms of retaining or capturing market opportunities?**

Most of the land surrounding the Stamford Harbor has or will be developed as residential and commercial properties. Some of the properties presently available are Stamford Landing, Stamford Harbor Park Stamford Harbour Square and Seaview House. Water-dependant uses are somewhat limited to recreational boating.

As a side note, Lobster fishermen that work out of the Stanford Harbor have been reduced from 12 (or so) to less than 5 over the last few years.

APPENDIX B

Strategic Economic Documents Reviewed

Strategic Economic Documents Reviewed

- The Economic Impact of Connecticut's Deepwater Ports University of Connecticut Center for Economic Analysis (2001);
- Connecticut Maritime Coalition Report- Connecticut Ports: Transportation Centers for People and Goods - Parson Brinkerhoff (2002);
- *The Economic Impact Study of Maritime Industries in Connecticut* report has been organized for presentation consistent with the approved outline developed in consultation with the Connecticut Maritime Coalition and the State of Connecticut DECD.
- Connecticut Maritime Coalition- Strategic Cluster Initiative Reports (2000 and 2001);
- Major Port and Economic Studies such as Port of New Haven Strategic Land Use Plan - Parson Brinkerhoff (2007);
- Revenue Source and industry statistics information from State of Connecticut Agencies;
- Trade and Maritime Industry Organizations;
- Recreational boat industry statistics and information from industry groups such as Connecticut Maritime Trade Association;
- Connecticut Port Authority and Harbor Master groups;
- Connecticut Department of Transportation (ConnDOT) - Maritime Commission;
- Bridgeport 2020: A Vision of the Future, Bridgeport Master Plan of Conservation and Development, City of Bridgeport, September 12, 2007.
- Bridgeport Comprehensive Economic Development Strategy (CEDS) 2007, City of Bridgeport, June 2007.
- Bridgeport Harbor Management Plan, IEP, Inc. and Cambridge Systematics, Inc., April 2005
- Port of New Haven Strategic Land Use Plan (Public Hearing Draft), Parsons Brinkerhoff, February 1, 2007.
- Comprehensive Economic Development Strategy for Southeastern Connecticut, Southeastern Connecticut Enterprise Region (seCTer), 2004
- Norwalk Harbor Management Plan Addendum, Norwalk Harbor Management Commission City of Norwalk, Connecticut, November 1997.
- Draft Norwalk Mid-Harbor Planning Study, Chan Krieger & Associates, Cambridge, Massachusetts, June 2004.
- Draft Stamford Harbor Management Plan, City of Stamford Harbor Management Commission, July 2008
- Connecticut Economic Strategic Plan 2009, Department of Economic and Community Development, September 2009

APPENDIX C

USACE Dredge Needs Summary Tables

Dredging Needs Summarized by Dredge Center

Dredge Center	Type	Facilities Surveyed	Responses Received	Maintenance 1-5yr	Maintenance 6-10yr	Maintenance 11-20yr	Maintenance 21-30yr	Total Maintenance
Block Island Area								
	BLOCK ISLAND HARBOR OF REFUGE, RI			20,000	20,000	40,000		
	GREAT SALT POND, BLOCK ISLAND, RI				20,000	20,000		
	Corps Navigation Projects			20,000	40,000	60,000		120,000
	Non-Federal Facilities	10	7	6,000	6,000			12,000
Bridgeport Area								
	BLACK ROCK HARBOR, CT						200,000	
	BRIDGEPORT HARBOR, CT						350,000	
	JOHNSONS CREEK (subproject to Bridgeport)						25,000	
	POQUONNOCK RIVER (subproject to Bridgeport)						50,000	
	SOUTHPORT HARBOR, CT						50,000	
	YELLOWMILL CHANNEL (subproject to Bridgeport)						55,000	
	Corps Navigation Projects						730,000	730,000
	Non-Federal Facilities	29	22	105,950	56,800	15,000		177,750
	Projections							7,321
Clinton/Westbrook Area								
	CLINTON HARBOR, CT			100,000		100,000		
	DUCK ISLAND HARBOR, CT						150,000	
	PATCHOGUE RIVER, CT			40,000		40,000		
	Corps Navigation Projects			140,000		140,000	150,000	430,000
	Non-Federal Facilities	29	19	85,300	80,000	372,500	62,500	600,300
	Projections							97,195
Connecticut River								
	CONNECTICUT RIVER BELOW HARTFORD, CT			50,000		50,000		
	EIGHTMILE RIVER AND HAMBURG COVE, CT						50,000	
	ESSEX COVE HARBOR, CT						40,000	
	NORTH COVE, OLD SAYBROOK, CT			200,000		200,000		
	SALMON RIVER COVE, CT						5,000	
	WETHERSFIELD COVE, CT						1,000	
	Corps Navigation Projects			250,000		250,000	96,000	596,000
	Non-Federal Facilities	70	46	299,480	269,950	362,230	338,830	1,270,490
	Projections							127,525
Eastchester Bay Area								
	East Chester Creek			135,000		100,000		
	Corps Navigation Projects			135,000		100,000		235,000
	Non-Federal Facilities	29	14	11,000		12,500		23,500
Fishers Island								
	HAY (WEST) HARBOR, NY						25,000	
	Corps Navigation Projects						25,000	25,000
	Non-Federal Facilities	4	4	22,300	8,300	8,339	8,300	47,239
	Projections							16,250
Fishers Island Sound/Little Narragansett Bay								
	MYSTIC RIVER AND HARBOR, CT						100,000	
	Pawcatuck River, Little Narragansett Bay & Watch Hill Cove, RI						100,000	
	STONINGTON HARBOR, CT						50,000	
	Corps Navigation Projects						250,000	250,000
	Non-Federal Facilities	53	35	55,820	382,520	63,020	43,020	544,380
	Projections							28,250

Dredging Needs Summarized by Dredge Center

Dredge Center	Type	Facilities Surveyed	Responses Received	Maintenance 1-5yr	Maintenance 6-10yr	Maintenance 11-20yr	Maintenance 21-30yr	Total Maintenance
Great & Little Peconic Bays								
	Mattituck Harbor						13,000	
	Corps Navigation Projects						13,000	13,000
	Non-Federal Facilities	35	18	12,100	11,100	18,000	28,000	69,200
	Projections							59,390
Greenwich Area								
	GREENWICH HARBOR, CT						40,000	
	MIANUS RIVER AND COSCOB HARBOR, CT						50,000	
	Corps Navigation Projects						90,000	90,000
	Non-Federal Facilities	20	18	82,163	45,500	29,700	20,500	177,863
	Projections							10,432
Guilford/Branford Area								
	BRANFORD HARBOR, CT				75,000		75,000	
	GUILFORD HARBOR, CT					45,000		
	STONY CREEK, BRANFORD, CT					50,000		
	Corps Navigation Projects				75,000	95,000	75,000	245,000
	Non-Federal Facilities	25	20	188,500	45,500	51,500	45,500	331,000
	Projections							23000
Hempstead Harbor Area								
	Glen Cove						14,000	
	Corps Navigation Projects						14,000	14,000
	Non-Federal Facilities	16	7	35,000	10,000	10,000	10,000	65,000
	Projections							25,700
Housatonic River/Milford Area								
	HOUSATONIC RIVER, CT						100,000	
	MILFORD HARBOR, CT			50,000		50,000		
	Corps Navigation Projects			50,000		50,000	100,000	200,000
	Non-Federal Facilities	20	13	80,515	43,300	55,300	41,300	220,415
	Projections							43,225
Huntington & Northport Bay Area								
	Federal Facility	1	1	8,000				8,000
	Non-Federal Facilities	25	13	19,500	5,000	13,000	3,500	41,000
	Projections							163,995
Mamaroneck Area/New Rochelle Area								
	Larchmont Harbor							
	Mamaroneck Harbor						162,000	
	New Rochelle Harbor						55,000	
	Corps Navigation Projects						217,000	217,000
	Non-Federal Facilities	32	15	66,600	25,800	47,800	83,800	224,000
	Projections							203,804
Manhasset & Little Neck Bays								
	Little Neck Bay						300,000	
	Corps Navigation Projects						300,000	300,000
	Federal Facility	1	1	36,000				36,000
	Non-Federal Facilities	31	15	110,000	13,000	63,000	62,500	248,500
	Projections							111,883
Montauk								
	Federal Facility	1	1					0
	Non-Federal Facilities	18	8	31,300	28,000	53,000	53,000	165,300

Dredging Needs Summarized by Dredge Center

Dredge Center	Type	Facilities Surveyed	Responses Received	Maintenance 1-5yr	Maintenance 6-10yr	Maintenance 11-20yr	Maintenance 21-30yr	Total Maintenance
New Haven Area								
	MILL RIVER (subproject to New Haven Hbr)						100,000	
	NEW HAVEN HARBOR, CT				200,000	200,000		
	QUINNIPIAC RIVER (subproject to New Haven Hbr)						50,000	
	WEST RIVER (subproject to New Haven Hbr)						100,000	
	Corps Navigation Projects				200,000	200,000	250,000	650,000
	Federal Facility	2	2			10,000		10,000
	Non-Federal Facilities	31	27	209,585	197,500	226,500	232,500	866,085
New London Area								
	NEW LONDON HARBOR, CT						250,000	
	THAMES RIVER, CT						200,000	
	Corps Navigation Projects						450,000	450,000
	Federal Facility	3	3	125,000	10,000	104,000		239,000
	Non-Federal Facilities	39	31	150,100	70,085	91,100	80,600	391,885
	Projections							378,495
Niantic Area								
	NIANTIC BAY & HARBOR, CT						20,000	
	Corps Navigation Projects						20,000	20,000
	Non-Federal Facilities	15	9	166,000	30,000	10,500	20,000	226,500
Norwalk Area								
	FIVEMILE RIVER HARBOR, CT					50,000		
	NORWALK HARBOR, CT			100,000		100,000		
	WESTPORT HARBOR & SAUGATUCK RIVER, CT						25,000	
	WILSON POINT HARBOR, CT						50,000	
	Corps Navigation Projects			100,000		150,000	75,000	325,000
	Non-Federal Facilities	57	31	57,800	143,000	51,040	75,000	326,840
	Projections							101,720
Oyster Bay/Cold Spring Harbor Area								
	Non-Federal Facilities	14	9	7,500	20,000		12,000	39,500
	Projections							23,026
Port Chester/Rye Area								
	Milton Harbor						60,000	
	Port Chester Creek and Harbor				200,000		200,000	
	Corps Navigation Projects				200,000		260,000	460,000
	Non-Federal Facilities	14	8	75,000	23,000	25,000	25,000	148,000
	Projections							11,425
Port Jefferson/Mount Sinai								
	Non-Federal Facilities	18	6	9,900				9,900
	Projections							19,409
Shelter Isl./Gardiner's Bay								
	Non-Federal Facilities	72	29	70,337	159,212	207,362	60,337	497,248
	Projections							446,614
Smithtown Bay/Stony Brook								
	Non-Federal Facilities	8	5	151,500	11,500	10,000	10,000	183,000
	Projections							195,050

Dredging Needs Summarized by Dredge Center

Dredge Center	Type	Facilities Surveyed	Responses Received	Maintenance 1-5yr	Maintenance 6-10yr	Maintenance 11-20yr	Maintenance 21-30yr	Total Maintenance
Stamford Area								
	STAMFORD HARBOR, CT						100,000	
	WESTCOTT COVE, CT						20,000	
	Corps Navigation Projects						120,000	120,000
	Non-Federal Facilities	20	8	74,629	50,000	40,000	60,000	224,629
	Projections							56,250
Suffolk County Beach Area								
	Non-Federal Facilities	1	0					0
	Projections							350
TOTALS				3,047,879	2,260,067	2,995,391	4,611,187	15,064,833

Dredging Needs Summarized by Dredge Center

Dredge Center	Type	Improvement 1-5Yr	Improvement 6-10yr	Improvement 11-20yr	Improvement 21-30yr	Total Improvement
Block Island Area						
	BLOCK ISLAND HARBOR OF REFUGE, RI					
	GREAT SALT POND, BLOCK ISLAND, RI					
	Corps Navigation Projects					0
	Non-Federal Facilities	6,000	18,000			24,000
Bridgeport Area						
	BLACK ROCK HARBOR, CT					
	BRIDGEPORT HARBOR, CT					
	JOHNSONS CREEK (subproject to Bridgeport)					
	POQUONNOCK RIVER (subproject to Bridgeport)					
	SOUTHPORT HARBOR, CT					
	YELLOWMILL CHANNEL (subproject to Bridgeport)					
	Corps Navigation Projects					0
	Non-Federal Facilities	155,200	26,000			181,200
	Projections					
Clinton/Westbrook Area						
	CLINTON HARBOR, CT					
	DUCK ISLAND HARBOR, CT					
	PATCHOGUE RIVER, CT					
	Corps Navigation Projects					0
	Non-Federal Facilities	83,000	18,000	3,000	98,000	202,000
	Projections					
Connecticut River						
	CONNECTICUT RIVER BELOW HARTFORD, CT					
	EIGHTMILE RIVER AND HAMBURG COVE, CT					
	ESSEX COVE HARBOR, CT					
	NORTH COVE, OLD SAYBROOK, CT					
	SALMON RIVER COVE, CT					
	WETHERSFIELD COVE, CT					
	Corps Navigation Projects					0
	Non-Federal Facilities	45,000	144,357	22,500	23,500	235,357
	Projections					
Eastchester Bay Area						
	East Chester Creek					
	Corps Navigation Projects					0
	Non-Federal Facilities					0
Fishers Island						
	HAY (WEST) HARBOR, NY					
	Corps Navigation Projects					0
	Non-Federal Facilities	6,000				6,000
	Projections					
Fishers Island Sound/Little Narragansett Bay						
	MYSTIC RIVER AND HARBOR, CT					
	Pawcatuck River, Little Narragansett Bay & Watch Hill Cove, RI					
	STONINGTON HARBOR, CT					
	Corps Navigation Projects					0
	Non-Federal Facilities	88,050	59,000			147,050
	Projections					

Dredging Needs Summarized by Dredge Center

Dredge Center	Type	Improvement 1-5Yr	Improvement 6-10yr	Improvement 11-20yr	Improvement 21-30yr	Total Improvement
Great & Little Peconic Bays						
	Mattituck Harbor					
	Corps Navigation Projects					0
	Non-Federal Facilities	500				500
	Projections					
Greenwich Area						
	GREENWICH HARBOR, CT					
	MIANUS RIVER AND COSCOB HARBOR, CT					
	Corps Navigation Projects					0
	Non-Federal Facilities		25,000	24,000		49,000
	Projections					
Guilford/Branford Area						
	BRANFORD HARBOR, CT					
	GUILFORD HARBOR, CT					
	STONY CREEK, BRANFORD, CT					
	Corps Navigation Projects					0
	Non-Federal Facilities					
	Projections	800	150,000			150,800
Hempstead Harbor Area						
	Glen Cove					
	Corps Navigation Projects					0
	Non-Federal Facilities					
	Projections					0
Housatonic River/Milford Area						
	HOUSATONIC RIVER, CT					
	MILFORD HARBOR, CT					
	Corps Navigation Projects					0
	Non-Federal Facilities					0
	Projections					
Huntington & Northport Bay Area						
	Federal Facility					0
	Non-Federal Facilities	3,001,000	2,500	2,000	2,000	3,007,500
	Projections					
Mamaroneck Area/New Rochelle Area						
	Larchmont Harbor					
	Mamaroneck Harbor					
	New Rochelle Harbor					
	Corps Navigation Projects					0
	Non-Federal Facilities	18,009	6,000	20,000	24,000	68,009
	Projections					
Manhasset & Little Neck Bays						
	Little Neck Bay					
	Corps Navigation Projects					0
	Federal Facility					0
	Non-Federal Facilities	2,500	5,000	5,000	5,000	17,500
	Projections					
Montauk						
	Federal Facility					0
	Non-Federal Facilities	75,000				75,000

Dredging Needs Summarized by Dredge Center

Dredge Center	Type	Improvement 1-5Yr	Improvement 6-10yr	Improvement 11-20yr	Improvement 21-30yr	Total Improvement
New Haven Area						
	MILL RIVER (subproject to New Haven Hbr)					
	NEW HAVEN HARBOR, CT					
	QUINNIPIAC RIVER (subproject to New Haven Hbr)					
	WEST RIVER (subproject to New Haven Hbr)					
	Corps Navigation Projects					0
	Federal Facility	1,000,000				1,000,000
	Non-Federal Facilities	45,000				45,000
New London Area						
	NEW LONDON HARBOR, CT					
	THAMES RIVER, CT					
	Corps Navigation Projects					0
	Federal Facility	200,000	150,000			350,000
	Non-Federal Facilities	102,000	60,000			162,000
	Projections					
Niantic Area						
	NIANTIC BAY & HARBOR, CT					
	Corps Navigation Projects					0
	Non-Federal Facilities	5,200	250,000	700		255,900
Norwalk Area						
	FIVEMILE RIVER HARBOR, CT					
	NORWALK HARBOR, CT					
	WESTPORT HARBOR & SAUGATUCK RIVER, CT					
	WILSON POINT HARBOR, CT					
	Corps Navigation Projects					0
	Non-Federal Facilities		10,100	10,000		20,100
	Projections					
Oyster Bay/Cold Spring Harbor Area						
	Non-Federal Facilities		2,000			2,000
	Projections					
Port Chester/Rye Area						
	Milton Harbor					
	Port Chester Creek and Harbor					
	Corps Navigation Projects					0
	Non-Federal Facilities					0
	Projections					
Port Jefferson/Mount Sinai						
	Non-Federal Facilities					0
	Projections					
Shelter Isl./Gardiner's Bay						
	Non-Federal Facilities	186,575	62,000	44,126	11,000	303,701
	Projections					
Smithtown Bay/Stony Brook						
	Non-Federal Facilities	200,000			3,800	203,800
	Projections					

Dredging Needs Summarized by Dredge Center

Dredge Center	Type	Improvement 1-5Yr	Improvement 6-10yr	Improvement 11-20yr	Improvement 21-30yr	Total Improvement
Stamford Area						
	STAMFORD HARBOR, CT					
	WESTCOTT COVE, CT					
	Corps Navigation Projects					0
	Non-Federal Facilities	100,000				100,000
	Projections					
Suffolk County Beach Area						
	Non-Federal Facilities					0
	Projections					
TOTALS		5,319,834	987,957	131,326	167,300	6,606,417

Dredging Needs Summarized by Waterway

Dredge Center	Waterway	Source	Facilities Surveyed	Responses Received	Maintenance 1-5yr	Maintenance 6-10yr	Maintenance 11-20yr	Maintenance 21-30yr	Total Maintenance
Bridgeport Area									
	Black Rock Harbor, Cedar Creek	Non-Federal Facilities	9	9	50,950	20,800	15,000		86,750
	Black Rock Harbor, CT	Federal Navigation Projects	1					200,000	200,000
	Bridgeport Harbor	Non-Federal Facilities	11	11	49,000	16,000			65,000
	Bridgeport Harbor, CT	Federal Navigation Projects	1					350,000	350,000
	Johnsons Creek	Federal Navigation Projects	1					25,000	25,000
	Poquonnock River	Federal Navigation Projects	1					50,000	50,000
	Rooster River, Fairfield	Non-Federal Facilities	1	1	6,000	20,000			26,000
	Southport Harbor	Non-Federal Facilities	1	1					0
	Southport Harbor, CT	Federal Navigation Projects	1					50,000	50,000
	Yellowmill Channel	Federal Navigation Projects	1					55,000	55,000
Clinton/Westbrook Area									0
	Clinton Harbor	Non-Federal Facilities	6	6	61,000	60,000	40,000	40,000	201,000
	Clinton Harbor, CT	Federal Navigation Projects	1		100,000		100,000		200,000
	Duck Island Harbor, CT	Federal Navigation Projects	1					150,000	150,000
	Indian River	Non-Federal Facilities	2	2	600				600
	Menunketesuck River	Non-Federal Facilities	6	6	3,700				3,700
	Patchogue River	Non-Federal Facilities	5	5	20,000	20,000	332,500	22,500	395,000
	Patchogue River, CT	Federal Navigation Projects	1		40,000		40,000		80,000
Connecticut River									0
	Black Hall River	Non-Federal Facilities	1	1	500				500
	Connecticut River	Non-Federal Facilities	30	27	70,250	69,020	67,500	72,500	279,270
	Connecticut River Below Hartford, CT	Federal Navigation Projects	1		50,000		50,000		100,000
	Eightmile River	Non-Federal Facilities	2	2	3,000	3,600	4,000	6,000	16,600
	Eightmile River and Hamburg Cove, CT	Federal Navigation Projects	1					50,000	50,000
	Essex Cove Harbor, CT	Federal Navigation Projects	1					40,000	40,000
	Essex Harbor	Non-Federal Facilities	7	7	38,000	36,000	64,000	49,000	187,000
	Fourmile River	Non-Federal Facilities	2	2	1,730	330	730	330	3,120
	North Cove, Old Saybrook, CT	Federal Navigation Projects	1		200,000		200,000		400,000
	Old Saybrook Harbor	Non-Federal Facilities	3	3	61,000	61,000	111,000	111,000	344,000
	Salmon River Cove, CT	Federal Navigation Projects	1					5,000	5,000
	Thames River	Non-Federal Facilities	2	2	10,000	100,000		100,000	210,000
	Wethersfield Cove	Non-Federal Facilities	2	2	115,000		115,000		230,000
	Wethersfield Cove, CT	Federal Navigation Projects	1					1,000	1,000
Eastchester Bay Area									0
	East Chester Creek	Federal Navigation Projects	1		135,000		100,000		235,000
	Eastchester Bay	Non-Federal Facilities	11	11	0	0	0	0	0
	Hutchinson River	Non-Federal Facilities	2	1	11,000		11,000		22,000
	Locust Point Harbor	Non-Federal Facilities	2	2			1,500		1,500
Fishers Island									0
	Hay (WEST) Harbor, NY	Federal Navigation Projects	1					25,000	25,000
	Hay Harbor	Non-Federal Facilities	1	1	7,800	7,800	7,800	7,800	31,200
	West Harbor, Fishers Island	Non-Federal Facilities	3	3	14,500	500	539	500	16,039

Dredging Needs Summarized by Waterway

Dredge Center	Waterway	Source	Facilities Surveyed	Responses Received	Maintenance 1-5yr	Maintenance 6-10yr	Maintenance 11-20yr	Maintenance 21-30yr	Total Maintenance
Fishers Island Sound/Little Narragansett Bay									0
	Little Narragansett Bay	Non-Federal Facilities	2	2	20	20	20	20	80
	Mystic Harbor	Non-Federal Facilities	16	16	34,750	48,000	43,000	40,000	165,750
	Mystic River and Harbor, CT	Federal Navigation Projects	1					100,000	100,000
	Pawcatuck River	Non-Federal Facilities	8	8	1,050	8,000		3,000	12,050
	Pawcatuck River, Little Narragansett Bay & Watch Hill Cove, RI	Federal Navigation Projects	1					100,000	100,000
	Stonington Harbor	Non-Federal Facilities	8	8	20,000	26,500	20,000	0	66,500
	Stonington Harbor, CT	Federal Navigation Projects	1					50,000	50,000
	Watch Hill Cove	Non-Federal Facilities	1	1		300,000			300,000
Great & Little Peconic Bays									0
	Cutchogue Harbor	Non-Federal Facilities	3	3					0
	Flanders Bay	Non-Federal Facilities	5	5	6,000	6,500	14,000	24,000	50,500
	Great Peconic Bay	Non-Federal Facilities	2	2		600			600
	Long Island Sound	Non-Federal Facilities	1	1					0
	Mattituck Harbor	Federal Navigation Projects	1					13,000	13,000
	Mattituck Inlet	Non-Federal Facilities	2	2					0
	Peconic River	Non-Federal Facilities	2	2	2,000				2,000
	Shinnecock Canal	Non-Federal Facilities	1	1					0
	Wooley Pond	Non-Federal Facilities	2	2	4,100	4,000	4,000	4,000	16,100
Greenwich Area									0
	Byram Harbor	Non-Federal Facilities	2	2	7,463	25,000			32,463
	Byram River	Non-Federal Facilities	2	2					0
	Cos Cob Harbor	Non-Federal Facilities	7	7	23,700	20,500	29,700	20,500	94,400
	Greenwich Cove	Non-Federal Facilities	1	1					0
	Greenwich Harbor	Non-Federal Facilities	5	5	31,000				31,000
	Greenwich Harbor, CT	Federal Navigation Projects	1					40,000	40,000
	Mianus River	Non-Federal Facilities	1	1	20,000				20,000
	Mianus River and Cos Cob Harbor, CT	Federal Navigation Projects	1					50,000	50,000
Guilford/Branford Area									0
	Branford Harbor	Non-Federal Facilities	5	5	34,000				34,000
	Branford Harbor, CT	Federal Navigation Projects	1			75,000		75,000	150,000
	Branford River	Non-Federal Facilities	3	3	9,000		6,000		15,000
	East Haven River	Non-Federal Facilities	1	1					0
	East River, Guilford	Non-Federal Facilities	1	1					0
	Guilford Harbor	Non-Federal Facilities	2	2					0
	Guilford Harbor, CT	Federal Navigation Projects	1				45,000		45,000
	Hammonasset River	Non-Federal Facilities	1	1	50,000				50,000
	Stony Creek	Non-Federal Facilities	4	4	77,000	27,000	27,000	27,000	158,000
	Stony Creek, Branford, CT	Federal Navigation Projects	1				50,000		50,000
	West River, Guilford	Non-Federal Facilities	3	3	18,500	18,500	18,500	18,500	74,000
Hempstead Harbor Area									0
	Glen Cove	Federal Navigation Projects	1					14,000	14,000
	Glen Cove	Non-Federal Facilities	2	2	25,000				25,000
	Glen Cove Creek, L.I. Sound	Non-Federal Facilities	3						0
	Hempstead Harbor	Non-Federal Facilities	6	5	10,000	10,000	10,000	10,000	40,000

Dredging Needs Summarized by Waterway

Dredge Center	Waterway	Source	Facilities Surveyed	Responses Received	Maintenance 1-5yr	Maintenance 6-10yr	Maintenance 11-20yr	Maintenance 21-30yr	Total Maintenance
Housatonic River/Milford Area									0
	Housatonic River	Non-Federal Facilities	7	7	39,215	12,000	14,000	10,000	75,215
	Housatonic River, CT	Federal Navigation Projects	1					100,000	100,000
	Milford Harbor	Non-Federal Facilities	6	6	41,300	31,300	41,300	31,300	145,200
	Milford Harbor, CT	Federal Navigation Projects	1		50,000		50,000		100,000
Huntington & Northport Bay Area									0
	Centerport Harbor	Non-Federal Facilities	1	1					0
	Duck Island Harbor	Non-Federal Facilities	1	1					0
	Huntington Bay	Other Federal Facility	1	1	8,000				8,000
	Huntington Harbor	Non-Federal Facilities	5	5	7,000	4,000	2,500	2,500	16,000
	Northport Harbor/Bay	Non-Federal Facilities	6	6	12,500	1,000	10,500	1,000	25,000
Mamaroneck Area/New Rochelle Area									0
	Hutchinson River	Non-Federal Facilities	1	1	2,800	1,800	1,800	1,800	8,200
	Larchmont Harbor	Federal Navigation Projects	1						0
	Larchmont Harbor	Non-Federal Facilities	2	2					0
	Mamaroneck Harbor	Federal Navigation Projects	1					162,000	162,000
	Mamaroneck Harbor	Non-Federal Facilities	8	7	40,800	19,000	41,000	67,000	167,800
	New Rochelle Harbor	Federal Navigation Projects	1					55,000	55,000
	New Rochelle Harbor	Non-Federal Facilities	5	5	23,000	5,000	5,000	15,000	48,000
Manhasset & Little Neck Bays									0
	Hempstead Harbor	Non-Federal Facilities	3	2					0
	Little Neck Bay	Other Federal Facility	1	1	36,000				36,000
	Little Neck Bay	Federal Navigation Projects	1					300,000	300,000
	Little Neck Bay	Non-Federal Facilities	2	2					0
	Manhasset Bay	Non-Federal Facilities	12	11	110,000	13,000	63,000	62,500	248,500
Montauk									0
	Lake Montauk	Other Federal Facility	1	1					0
	Lake Montauk	Non-Federal Facilities	8	8	31,300	28,000	53,000	53,000	165,300
New Haven Area									0
	East Haven River	Non-Federal Facilities	1	1					0
	Mill River	Federal Navigation Projects	1					100,000	100,000
	Morris Cove, New Haven Harbor	Non-Federal Facilities	2	2	1,085				1,085
	New Haven Harbor	Other Federal Facility	2	2			10,000		10,000
	New Haven Harbor	Non-Federal Facilities	21	21	208,500	187,500	216,500	222,500	835,000
	New Haven Harbor, CT	Federal Navigation Projects	1			200,000	200,000		400,000
	Quinnipiac River	Non-Federal Facilities	3	3		10,000	10,000	10,000	30,000
	Quinnipiac River	Federal Navigation Projects	1					50,000	50,000
	West River	Federal Navigation Projects	1					100,000	100,000
New London Area									0
	Mystic Harbor	Non-Federal Facilities	1	1			1,000		1,000
	New London Harbor	Other Federal Facility	1	1			4,000		4,000
	New London Harbor	Non-Federal Facilities	22	22	115,600	45,585	45,600	60,600	267,385
	New London Harbor, CT	Federal Navigation Projects	1					250,000	250,000
	Thames River	Other Federal Facility	2	2	125,000	10,000	100,000		235,000
	Thames River	Non-Federal Facilities	11	8	34,500	24,500	44,500	20,000	123,500
	Thames River, CT	Federal Navigation Projects	1					200,000	200,000

Dredging Needs Summarized by Waterway

Dredge Center	Waterway	Source	Facilities Surveyed	Responses Received	Maintenance 1-5yr	Maintenance 6-10yr	Maintenance 11-20yr	Maintenance 21-30yr	Total Maintenance
Niantic Area									0
	Niantic Bay	Non-Federal Facilities	9	9	166,000	30,000	10,500	20,000	226,500
	Niantic Bay & Harbor, CT	Federal Navigation Projects	1					20,000	20,000
Norwalk Area									0
	Darien Harbor	Non-Federal Facilities	4	4		35,000		6,000	41,000
	Fivemile River	Non-Federal Facilities	2	2					0
	Fivemile River Harbor, CT	Federal Navigation Projects	1				50,000		50,000
	Norwalk Harbor	Non-Federal Facilities	14	14	39,300	16,000	16,040	6,000	77,340
	Norwalk Harbor, CT	Federal Navigation Projects	1		100,000		100,000		200,000
	Norwalk River	Non-Federal Facilities	3	3	2,000	24,000			26,000
	Southport Harbor	Non-Federal Facilities	2	2	15,000	42,000		15,000	72,000
	Westport Harbor	Non-Federal Facilities	2	2		20,000	20,000	45,000	85,000
	Westport Harbor & Saugatuck River, CT	Federal Navigation Projects	1					25,000	25,000
	Wilson Cove	Non-Federal Facilities	4	4	1,500	6,000	15,000	3,000	25,500
	Wilson Point Harbor, CT	Federal Navigation Projects	1					50,000	50,000
Oyster Bay/Cold Spring Harbor Area									0
	Cold Spring Harbor	Non-Federal Facilities	2	2	2,000	10,000			12,000
	Oyster Bay Harbor	Non-Federal Facilities	6	6	5,500	10,000		12,000	27,500
	West Harbor	Non-Federal Facilities	1	1					0
Port Chester/Rye Area									0
	Byram River	Non-Federal Facilities	4	3					0
	Milton Harbor	Federal Navigation Projects	1					60,000	60,000
	Milton Harbor	Non-Federal Facilities	4	4	25,000	23,000	25,000	25,000	98,000
	Port Chester Creek and Harbor	Federal Navigation Projects	1			200,000		200,000	400,000
	Port Chester Harbor	Non-Federal Facilities	1	1	50,000				50,000
Port Jefferson/Mount Sinai									0
	Mount Sinai Harbor	Non-Federal Facilities	4	1	1,500				1,500
	Port Jefferson Harbor	Non-Federal Facilities	5	5	8,400				8,400
Shelter Isl./Gardiner's Bay									0
	Coecles Harbor	Non-Federal Facilities	2	2					0
	Dering Harbor	Non-Federal Facilities	3	3	10,000	10,000	10,000	10,000	40,000
	Gardiners Bay	Non-Federal Facilities	1	1	500	550	1,500	1,500	4,050
	Greenport Harbor	Non-Federal Facilities	4	4	500	100,750	100,600	500	202,350
	Long Beach Bay	Non-Federal Facilities	1	1	6,000				6,000
	Noyac Bay	Non-Federal Facilities	1	1		150			150
	Sag Harbor Bay	Non-Federal Facilities	4	4	3,000	2,500	52,500	2,500	60,500
	Southold Bay	Non-Federal Facilities	4	4	5,250	4,750	2,750	2,750	15,500
	Stirling Basin, Greenport Harbor	Non-Federal Facilities	1						0
	Threemile Harbor	Non-Federal Facilities	9	9	45,087	40,512	40,012	43,087	168,698
Smithtown Bay/Stony Brook									0
	Nissequogue River	Non-Federal Facilities	1	1	100,000				100,000
	Stony Brook Harbor	Non-Federal Facilities	4	4	51,500	11,500	10,000	10,000	83,000

Dredging Needs Summarized by Waterway

Dredge Center	Waterway	Source	Facilities Surveyed	Responses Received	Maintenance 1-5yr	Maintenance 6-10yr	Maintenance 11-20yr	Maintenance 21-30yr	Total Maintenance
Stamford Area									0
	Cove Harbor	Non-Federal Facilities	1	1	20,000			20,000	40,000
	Stamford Harbor	Non-Federal Facilities	6	6	54,629	50,000	40,000	40,000	184,629
	Stamford Harbor, CT	Federal Navigation Projects	1					100,000	100,000
	Westcott Cove	Non-Federal Facilities	1	1					0
	Westcott Cove, CT	Federal Navigation Projects	1					20,000	20,000
Westerly/Block Island Area									0
	Block Island Harbor of Refuge, RI	Federal Navigation Projects	1		20,000	20,000	40,000		80,000
	Great Salt Pond	Non-Federal Facilities	5	5					0
	Great Salt Pond, Block Island, RI	Federal Navigation Projects	1			20,000	20,000		40,000
	Old Harbor	Non-Federal Facilities	2	2	6,000	6,000			12,000

Dredging Needs Summarized by Waterway

Dredge Center	Waterway	Source	Improvement 1-5yr	Improvement 6-10yr	Improvement 11-20yr	Improvement 21-30yr	Total Improvement
Bridgeport Area							0
	Black Rock Harbor, Cedar Creek	Non-Federal Facilities	17,700				17,700
	Black Rock Harbor, CT	Federal Navigation Projects					0
	Bridgeport Harbor	Non-Federal Facilities	137,500	26,000			163,500
	Bridgeport Harbor, CT	Federal Navigation Projects					0
	Johnsons Creek	Federal Navigation Projects					0
	Poquonnock River	Federal Navigation Projects					0
	Rooster River, Fairfield	Non-Federal Facilities					0
	Southport Harbor	Non-Federal Facilities					0
	Southport Harbor, CT	Federal Navigation Projects					0
	Yellowmill Channel	Federal Navigation Projects					0
Clinton/Westbrook Area							0
	Clinton Harbor	Non-Federal Facilities	81,000	18,000	3,000	98,000	200,000
	Clinton Harbor, CT	Federal Navigation Projects					0
	Duck Island Harbor, CT	Federal Navigation Projects					0
	Indian River	Non-Federal Facilities					0
	Menunketesuck River	Non-Federal Facilities	2,000				2,000
	Patchogue River	Non-Federal Facilities	0	0	0	0	0
	Patchogue River, CT	Federal Navigation Projects					0
Connecticut River							0
	Black Hall River	Non-Federal Facilities					0
	Connecticut River	Non-Federal Facilities	25,000	96,857	10,000	10,000	141,857
	Connecticut River Below Hartford, CT	Federal Navigation Projects					0
	Eightmile River	Non-Federal Facilities	4,000				4,000
	Eightmile River and Hamburg Cove, CT	Federal Navigation Projects					0
	Essex Cove Harbor, CT	Federal Navigation Projects					0
	Essex Harbor	Non-Federal Facilities	6,000	12,500	12,500	13,500	44,500
	Fourmile River	Non-Federal Facilities					0
	North Cove, Old Saybrook, CT	Federal Navigation Projects					0
	Old Saybrook Harbor	Non-Federal Facilities					0
	Salmon River Cove, CT	Federal Navigation Projects					0
	Thames River	Non-Federal Facilities	10,000				10,000
	Wethersfield Cove	Non-Federal Facilities					0
	Wethersfield Cove, CT	Federal Navigation Projects					0
Eastchester Bay Area							0
	East Chester Creek	Federal Navigation Projects					0
	Eastchester Bay	Non-Federal Facilities	0	0	0	0	0
	Hutchinson River	Non-Federal Facilities					0
	Locust Point Harbor	Non-Federal Facilities					0
Fishers Island							0
	Hay (WEST) Harbor, NY	Federal Navigation Projects					0
	Hay Harbor	Non-Federal Facilities					0
	West Harbor, Fishers Island	Non-Federal Facilities	6,000				6,000

Dredging Needs Summarized by Waterway

Dredge Center	Waterway	Source	Improvement 1-5yr	Improvement 6-10yr	Improvement 11-20yr	Improvement 21-30yr	Total Improvement
Fishers Island Sound/Little Narragansett Bay							0
	Little Narragansett Bay	Non-Federal Facilities					0
	Mystic Harbor	Non-Federal Facilities	72,250	24,000			96,250
	Mystic River and Harbor, CT	Federal Navigation Projects					0
	Pawcatuck River	Non-Federal Facilities	15,800	25,000			40,800
	Pawcatuck River, Little Narragansett Bay & Watch Hill Cove, RI	Federal Navigation Projects					0
	Stonington Harbor	Non-Federal Facilities	0	10,000	0	0	10,000
	Stonington Harbor, CT	Federal Navigation Projects					0
	Watch Hill Cove	Non-Federal Facilities					0
Great & Little Peconic Bays							0
	Cutchogue Harbor	Non-Federal Facilities					0
	Flanders Bay	Non-Federal Facilities	500				500
	Great Peconic Bay	Non-Federal Facilities					0
	Long Island Sound	Non-Federal Facilities					0
	Mattituck Harbor	Federal Navigation Projects					0
	Mattituck Inlet	Non-Federal Facilities					0
	Peconic River	Non-Federal Facilities					0
	Shinnecock Canal	Non-Federal Facilities					0
	Wooley Pond	Non-Federal Facilities					0
Greenwich Area							0
	Byram Harbor	Non-Federal Facilities					0
	Byram River	Non-Federal Facilities					0
	Cos Cob Harbor	Non-Federal Facilities					0
	Greenwich Cove	Non-Federal Facilities			24,000		24,000
	Greenwich Harbor	Non-Federal Facilities		25,000			25,000
	Greenwich Harbor, CT	Federal Navigation Projects					0
	Mianus River	Non-Federal Facilities					0
	Mianus River and Cos Cob Harbor, CT	Federal Navigation Projects					0
Guilford/Branford Area							0
	Branford Harbor	Non-Federal Facilities					0
	Branford Harbor, CT	Federal Navigation Projects					0
	Branford River	Non-Federal Facilities					0
	East Haven River	Non-Federal Facilities					0
	East River, Guilford	Non-Federal Facilities					0
	Guilford Harbor	Non-Federal Facilities					0
	Guilford Harbor, CT	Federal Navigation Projects					0
	Hammonasset River	Non-Federal Facilities					0
	Stony Creek	Non-Federal Facilities					0
	Stony Creek, Branford, CT	Federal Navigation Projects					0
	West River, Guilford	Non-Federal Facilities	800	150,000			150,800
Hempstead Harbor Area							0
	Glen Cove	Federal Navigation Projects					0
	Glen Cove	Non-Federal Facilities					0
	Glen Cove Creek, L.I. Sound	Non-Federal Facilities					0
	Hempstead Harbor	Non-Federal Facilities					0

Dredging Needs Summarized by Waterway

Dredge Center	Waterway	Source	Improvement 1-5yr	Improvement 6-10yr	Improvement 11-20yr	Improvement 21-30yr	Total Improvement
Housatonic River/Milford Area							0
	Housatonic River	Non-Federal Facilities					0
	Housatonic River, CT	Federal Navigation Projects					0
	Milford Harbor	Non-Federal Facilities					0
	Milford Harbor, CT	Federal Navigation Projects					0
Huntington & Northport Bay Area							0
	Centerport Harbor	Non-Federal Facilities					0
	Duck Island Harbor	Non-Federal Facilities	3,000,000				3,000,000
	Huntington Bay	Other Federal Facility					0
	Huntington Harbor	Non-Federal Facilities		1,500			1,500
	Northport Harbor/Bay	Non-Federal Facilities	1,000	1,000	2,000	2,000	6,000
Mamaroneck Area/New Rochelle Area							0
	Hutchinson River	Non-Federal Facilities					0
	Larchmont Harbor	Federal Navigation Projects					0
	Larchmont Harbor	Non-Federal Facilities					0
	Mamaroneck Harbor	Federal Navigation Projects					0
	Mamaroneck Harbor	Non-Federal Facilities	18,009	6,000	20,000	24,000	68,009
	New Rochelle Harbor	Federal Navigation Projects					0
	New Rochelle Harbor	Non-Federal Facilities					0
Manhasset & Little Neck Bays							0
	Hempstead Harbor	Non-Federal Facilities					0
	Little Neck Bay	Other Federal Facility					0
	Little Neck Bay	Federal Navigation Projects					0
	Little Neck Bay	Non-Federal Facilities					0
	Manhasset Bay	Non-Federal Facilities	2,500	5,000	5,000	5,000	17,500
Montauk							0
	Lake Montauk	Other Federal Facility					0
	Lake Montauk	Non-Federal Facilities	75,000				75,000
New Haven Area							0
	East Haven River	Non-Federal Facilities					0
	Mill River	Federal Navigation Projects					0
	Morris Cove, New Haven Harbor	Non-Federal Facilities					0
	New Haven Harbor	Other Federal Facility	1,000,000				1,000,000
	New Haven Harbor	Non-Federal Facilities	15,000				15,000
	New Haven Harbor, CT	Federal Navigation Projects					0
	Quinnipiac River	Non-Federal Facilities	30,000				30,000
	Quinnipiac River	Federal Navigation Projects					0
	West River	Federal Navigation Projects					0
New London Area							0
	Mystic Harbor	Non-Federal Facilities					0
	New London Harbor	Other Federal Facility					0
	New London Harbor	Non-Federal Facilities	102,000	60,000			162,000
	New London Harbor, CT	Federal Navigation Projects					0
	Thames River	Other Federal Facility	200,000	150,000			350,000
	Thames River	Non-Federal Facilities	0	0	0	0	0
	Thames River, CT	Federal Navigation Projects					0

Dredging Needs Summarized by Waterway

Dredge Center	Waterway	Source	Improvement 1-5yr	Improvement 6-10yr	Improvement 11-20yr	Improvement 21-30yr	Total Improvement
Niantic Area							0
	Niantic Bay	Non-Federal Facilities	5,200	250,000	700		255,900
	Niantic Bay & Harbor, CT	Federal Navigation Projects					0
Norwalk Area							0
	Darien Harbor	Non-Federal Facilities					0
	Fivemile River	Non-Federal Facilities					0
	Fivemile River Harbor, CT	Federal Navigation Projects					0
	Norwalk Harbor	Non-Federal Facilities		100			100
	Norwalk Harbor, CT	Federal Navigation Projects					0
	Norwalk River	Non-Federal Facilities					0
	Southport Harbor	Non-Federal Facilities					0
	Westport Harbor	Non-Federal Facilities					0
	Westport Harbor & Saugatuck River, CT	Federal Navigation Projects					0
	Wilson Cove	Non-Federal Facilities		10,000	10,000		20,000
	Wilson Point Harbor, CT	Federal Navigation Projects					0
Oyster Bay/Cold Spring Harbor Area							0
	Cold Spring Harbor	Non-Federal Facilities					0
	Oyster Bay Harbor	Non-Federal Facilities		2,000			2,000
	West Harbor	Non-Federal Facilities					0
Port Chester/Rye Area							0
	Byram River	Non-Federal Facilities					0
	Milton Harbor	Federal Navigation Projects					0
	Milton Harbor	Non-Federal Facilities					0
	Port Chester Creek and Harbor	Federal Navigation Projects					0
	Port Chester Harbor	Non-Federal Facilities					0
Port Jefferson/Mount Sinai							0
	Mount Sinai Harbor	Non-Federal Facilities					0
	Port Jefferson Harbor	Non-Federal Facilities					0
Shelter Isl./Gardiner's Bay							0
	Coecles Harbor	Non-Federal Facilities					0
	Dering Harbor	Non-Federal Facilities	1,000	51,000	1,000	1,000	54,000
	Gardiners Bay	Non-Federal Facilities					0
	Greenport Harbor	Non-Federal Facilities	1,000	0	0	0	1,000
	Long Beach Bay	Non-Federal Facilities	5,000				5,000
	Noyac Bay	Non-Federal Facilities			7,000		7,000
	Sag Harbor Bay	Non-Federal Facilities	1,500		20,000		21,500
	Southold Bay	Non-Federal Facilities	0	0	0	0	0
	Stirling Basin, Greenport Harbor	Non-Federal Facilities					0
	Threemile Harbor	Non-Federal Facilities	178,075	11,000	16,126	10,000	215,201
Smithtown Bay/Stony Brook							0
	Nissequogue River	Non-Federal Facilities	200,000				200,000
	Stony Brook Harbor	Non-Federal Facilities				3,800	3,800

Dredging Needs Summarized by Waterway

Dredge Center	Waterway	Source	Improvement 1-5yr	Improvement 6-10yr	Improvement 11-20yr	Improvement 21-30yr	Total Improvement
Stamford Area							0
	Cove Harbor	Non-Federal Facilities					0
	Stamford Harbor	Non-Federal Facilities	100,000				100,000
	Stamford Harbor, CT	Federal Navigation Projects					0
	Westcott Cove	Non-Federal Facilities					0
	Westcott Cove, CT	Federal Navigation Projects					0
Westerly/Block Island Area							0
	Block Island Harbor of Refuge, RI	Federal Navigation Projects					0
	Great Salt Pond	Non-Federal Facilities					0
	Great Salt Pond, Block Island, RI	Federal Navigation Projects					0
	Old Harbor	Non-Federal Facilities	6,000	18,000			24,000

APPENDIX D

Technical Details on the I-O Model

This appendix discusses the history and application of input-output analysis and details the input-output model, called the R/ECON™ I-O model, developed by Rutgers University. This model offers significant advantages in detailing the total economic effects of an activity (such as historic rehabilitation and heritage tourism), including multiplier effects.

ESTIMATING MULTIPLIERS

The fundamental issue determining the size of the multiplier effect is the "openness" of regional economies. Regions that are more "open" are those that import their required inputs from other regions. Imports can be thought of as substitutes for local production. Thus, the more a region depends on imported goods and services instead of its own production, the more economic activity leaks away from the local economy. Businessmen noted this phenomenon and formed local chambers of commerce with the explicit goal of stopping such leakage by instituting a "buy local" policy among their membership. In addition, during the 1970s, as an import invasion was under way, businessmen and union leaders announced a "buy American" policy in the hope of regaining ground lost to international economic competition. Therefore, one of the main goals of regional economic multiplier research has been to discover better ways to estimate the leakage of purchases out of a region or, relatedly, to determine the region's level of self-sufficiency.

The earliest attempts to systematize the procedure for estimating multiplier effects used the economic base model, still in use in many econometric models today. This approach assumes that all economic activities in a region can be divided into two categories: "basic" activities that produce exclusively for export, and region-serving or "local" activities that produce strictly for internal regional consumption. Since this approach is simpler but similar to the approach used by regional input-output analysis, let us explain briefly how multiplier effects are estimated using the economic base approach. If we let **x** be export employment, **l** be local employment, and **t** be total employment, then

$$\mathbf{t} = \mathbf{x} + \mathbf{l}$$

For simplification, we create the ratio **a** as

$$\mathbf{a} = \mathbf{l}/\mathbf{t}$$

so that $\mathbf{l} = \mathbf{at}$

then substituting into the first equation, we obtain

$$\mathbf{t} = \mathbf{x} + \mathbf{at}$$

By bringing all of the terms with t to one side of the equation, we get

$$\mathbf{t} - \mathbf{at} = \mathbf{x} \text{ or } \mathbf{t}\,(1-\mathbf{a}) = \mathbf{x}$$

Solving for **t,** we get $\mathbf{t} = \mathbf{x}/(1-\mathbf{a})$

Thus, if we know the amount of export-oriented employment, **x,** and the ratio of local to total employment, **a**, we can readily calculate total employment by applying the economic base multiplier, 1/(1-**a**), which is embedded in the above formula. Thus, if 40 percent of all regional employment is used to produce exports, the regional multiplier would be 2.5. The assumption behind this multiplier is that all remaining regional employment is required to support the export employment. Thus, the 2.5 can be decomposed into two parts the direct effect of the exports, which is always 1.0, and the indirect and induced effects, which is the remainder—in this case 1.5. Hence, the multiplier can be read as telling us that for each export-oriented job another 1.5 jobs are needed to support it.

This notion of the multiplier has been extended so that **x** is understood to represent an economic change demanded by an organization or institution outside of an economy—so-called final demand. Such changes can be those effected by government, households, or even by an outside firm. Changes in the economy can therefore be calculated by a minor alteration in the multiplier formula:

$$\Delta \mathbf{t} = \Delta \mathbf{x}/(1-\mathbf{a})$$

The high level of industry aggregation and the rigidity of the economic assumptions that permit the application of the economic base multiplier have caused this approach to be subject to extensive criticism. Most of the discussion has focused on the estimation of the parameter **a**. Estimating this parameter requires that one be able to distinguish those parts of the economy that produce for local consumption from those that do not. Indeed, virtually all industries, even services, sell to customers both inside and outside the region. As a result, regional economists devised an approach by which to measure the *degree* to which each industry is involved in the nonbase activities of the region, better known as the industry's *regional purchase coefficient*. Thus, they expanded the above formulations by calculating for each ***i*** industry

$$\mathbf{l}_i = \mathbf{r}_i \mathbf{d}_i$$

and

$$\mathbf{x}_i = \mathbf{t}_i - \mathbf{r}_i \mathbf{d}_i$$

given that $\mathbf{d}_i$ is the total regional demand for industry ***i***'s product. Given the above formulae and data on regional demands by industry, one can calculate an accurate traditional aggregate economic base parameter by the following:

$$\mathbf{a} = \mathbf{l}/\mathbf{t} = \Sigma \mathbf{l}_{ii}/\Sigma \mathbf{t}_i$$

Although accurate, this approach only facilitates the calculation of an aggregate multiplier for the entire region. That is, we cannot determine from this approach what the effects are on the various sectors of an economy. This is despite the fact that one must painstakingly calculate the regional demand as well as the degree to which they each industry is involved in nonbase activity in the region.

As a result, a different approach to multiplier estimation that takes advantage of the detailed demand and trade data was developed. This approach is called input-output analysis.

REGIONAL INPUT-OUTPUT ANALYSIS: A BRIEF HISTORY

The basic framework for input-output analysis originated nearly 250 years ago when François Quesenay published *Tableau Economique* in 1758. Quesenay's "tableau" graphically and numerically portrayed the relationships between sales and purchases of the various industries of an economy. More than a century later, his description was adapted by Leon Walras, who advanced input-output modeling by providing a concise theoretical formulation of an economic system (including consumer purchases and the economic representation of "technology").

It was not until the twentieth century, however, that economists advanced and tested Walras's work. Wassily Leontief greatly simplified Walras's theoretical formulation by applying the Nobel prize–winning assumptions that both technology and trading patterns were fixed over time. These two assumptions meant that the pattern of flows among industries in an area could be considered stable. These assumptions permitted Walras's formulation to use data from a single time period, which generated a great reduction in data requirements.

Although Leontief won the Nobel Prize in 1973, he first used his approach in 1936 when he developed a model of the 1919 and 1929 U.S. economies to estimate the effects of the end of World War I on national employment. Recognition of his work in terms of its wider acceptance and use meant development of a standardized procedure for compiling the requisite data (today's national economic census of industries) and enhanced capability for calculations (i.e., the computer).

The federal government immediately recognized the importance of Leontief's development and has been publishing input-output tables of the U.S. economy since 1939. The most recently published tables are those for 1987. Other nations followed suit. Indeed, the United Nations maintains a bank of tables from most member nations with a uniform accounting scheme.

Framework

Input-output modeling focuses on the interrelationships of sales and purchases among sectors of the economy. Input-output is best understood through its most basic form, the *interindustry transactions table* or matrix. In this table (see figure 1 for an example), the column industries are consuming sectors (or markets) and the row industries are producing sectors. The content of a matrix cell is the value of shipments that the row industry delivers to the column industry. Conversely, it is the value of shipments that the column industry receives from the row industry. Hence, the interindustry transactions table is a detailed accounting of the disposition of the value of shipments in an economy. Indeed, the detailed accounting of the interindustry transactions at the national level is performed not so much to facilitate calculation of national economic impacts as it is to back out an estimate of the nation's gross domestic product.

FIGURE 1
Interindustry Transactions Matrix (Values)

	Agriculture	Manufacturing	Services	Other	Final Demand	Total Output
Agriculture	10	65	10	5	10	$100
Manufacturing	40	25	35	75	25	$200
Services	15	5	5	5	90	$120
Other	15	10	50	50	100	$225
Value Added	20	95	20	90		
Total Input	100	200	120	225		

For example, in figure 1, agriculture, as a producing industry sector, is depicted as selling $65 million of goods to manufacturing. Conversely, the table depicts that the manufacturing industry purchased $65 million of agricultural production. The sum across columns of the interindustry transaction matrix is called the *intermediate outputs vector*. The sum across rows is called the *intermediate inputs vector*.

A single *final demand* column is also included in Figure 1. Final demand, which is outside the square interindustry matrix, includes imports, exports, government purchases, changes in inventory, private investment, and sometimes household purchases.

The *value added* row, which is also outside the square interindustry matrix, includes wages and salaries, profit-type income, interest, dividends, rents, royalties, capital consumption allowances, and taxes. It is called value added because it is the difference between the total value of the industry's production and the value of the goods and nonlabor services that it requires to produce. Thus, it is the *value* that an industry *adds* to the goods and services it uses as inputs in order to produce output.

The value added row measures each industry's contribution to wealth accumulation. In a national model, therefore, its sum is better known as the gross domestic product (GDP). At the state level, this is known as the gross state product—a series produced by the U.S. Bureau of Economic Analysis and published in the Regional Economic Information System. Below the state level, it is known simply as the regional equivalent of the GDP—the gross regional product.

Input-output economic impact modelers now tend to include the household industry within the square interindustry matrix. In this case, the "consuming industry" is the household itself. Its spending is extracted from the final demand column and is appended as a separate column in the interindustry matrix. To maintain a balance, the income of households must be appended as a row. The main income of households is labor income, which is extracted from the value-added row. Modelers tend not to include other sources of household income in the household industry's row. This is not because such income is not attributed to households but rather because much of this other income derives from sources outside of the economy that is being modeled.

The next step in producing input-output multipliers is to calculate the *direct requirements matrix*, which is also called the technology matrix. The calculations are based entirely on data from

figure 1. As shown in figure 2, the values of the cells in the direct requirements matrix are derived by dividing each cell in a column of figure 1, the interindustry transactions matrix, by its column total. For example, the cell for manufacturing's purchases from agriculture is 65/200 = .33. Each cell in a column of the direct requirements matrix shows how many cents of each producing industry's goods and/or services are required to produce one dollar of the consuming industry's production and are called *technical coefficients*. The use of the terms "technology" and "technical" derive from the fact that a column of this matrix represents a recipe for a unit of an industry's production. It, therefore, shows the needs of each industry's production process or "technology."

FIGURE 2
Direct Requirements Matrix

	Agriculture	Manufacturing	Services	Other
Agriculture	.10	.33	.08	.02
Manufacturing	.40	.13	.29	.33
Services	.15	.03	.04	.02
Other	.15	.05	.42	.22

Next in the process of producing input-output multipliers, the *Leontief Inverse* is calculated. To explain what the Leontief Inverse is, let us temporarily turn to equations. Now, from figure 1 we know that the sum across both the rows of the square interindustry transactions matrix (**Z**) and the final demand vector (**y**) is equal to vector of production by industry (**x**). That is,

$$\mathbf{x} = \mathbf{Zi} + \mathbf{y}$$

where **i** is a summation vector of ones. Now, we calculate the direct requirements matrix (**A**) by dividing the interindustry transactions matrix by the production vector or

$$\mathbf{A} = \mathbf{Z}\mathbf{X}^{-1}$$

where $\mathbf{X}^{-1}$ is a square matrix with inverse of each element in the vector **x** on the diagonal and the rest of the elements equal to zero. Rearranging the above equation yields

$$\mathbf{Z} = \mathbf{AX}$$

where **X** is a square matrix with the elements of the vector **x** on the diagonal and zeros elsewhere. Thus,

$$\mathbf{x} = (\mathbf{AX})\mathbf{i} + \mathbf{y}$$

or, alternatively,

$$\mathbf{x} = \mathbf{Ax} + \mathbf{y}$$

solving this equation for **x** yields

$$\mathbf{x} = (\mathbf{I}-\mathbf{A})^{-1}\ \mathbf{y}$$

Total Output = Total Requirements * Final Demand

The Leontief Inverse is the matrix $(\mathbf{I}-\mathbf{A})^{-1}$. It portrays the relationships between final demand and production. This set of relationships is exactly what is needed to identify the economic impacts of an event external to an economy.

Because it does translate the direct economic effects of an event into the total economic effects on the modeled economy, the Leontief Inverse is also called the *total requirements matrix.* The total requirements matrix resulting from the direct requirements matrix in the example is shown in figure 3.

FIGURE 3
Total Requirements Matrix

	Agriculture	Manufacturing	Services	Other
Agriculture	1.5	.6	.4	.3
Manufacturing	1.0	1.6	.9	.7
Services	.3	.1	1.2	.1
Other	.5	.3	.8	1.4
Industry Multipliers	.33	2.6	3.3	2.5

In the direct or technical requirements matrix in Figure 2, the technical coefficient for the manufacturing sector's purchase from the agricultural sector was .33, indicating the 33 cents of agricultural products must be directly purchased to produce a dollar's worth of manufacturing products. The same "cell" in Figure 3 has a value of .6. This indicates that for every dollar's worth of product that manufacturing ships out of the economy (i.e., to the government or for export), agriculture will end up increasing its production by 60 cents. The sum of each column in the total requirements matrix is the *output multiplier* for that industry.

Multipliers

A *multiplier* is defined as the system of economic transactions that follow a disturbance in an economy. Any economic disturbance affects an economy in the same way as does a drop of water in a still pond. It creates a large primary "ripple" by causing a *direct* change in the purchasing patterns of affected firms and institutions. The suppliers of the affected firms and institutions must change their purchasing patterns to meet the demands placed upon them by the firms originally affected by the economic disturbance, thereby creating a smaller secondary "ripple." In turn, those who meet the needs of the suppliers must change their purchasing patterns to meet the demands placed upon them by the suppliers of the original firms, and so on; thus, a number of subsequent "ripples" are created in the economy.

The multiplier effect has three components—direct, indirect, and induced effects. Because of the pond analogy, it is also sometimes referred to as the *ripple effect*.

- A *direct effect* (the initial drop causing the ripple effects) is the change in purchases due to a change in economic activity.

- An *indirect effect* is the change in the purchases of suppliers to those economic activities directly experiencing change.

- An *induced effect* is the change in consumer spending that is generated by changes in labor income within the region as a result of the direct and indirect effects of the economic activity. Including households as a column and row in the interindustry matrix allows this effect to be captured.

Extending the Leontief Inverse to pertain not only to relationships between *total* production and final demand of the economy but also to *change*s in each permits its multipliers to be applied to many types of economic impacts. Indeed, in impact analysis the Leontief Inverse lends itself to the drop-in-a-pond analogy discussed earlier. This is because the Leontief Inverse multiplied by a change in final demand can be estimated by a power series. That is,

$$(\mathbf{I}-\mathbf{A})^{-1}\,\Delta\mathbf{y} = \Delta\mathbf{y} + \mathbf{A}\,\Delta\mathbf{y} + \mathbf{A}(\mathbf{A}\,\Delta\mathbf{y}) + \mathbf{A}(\mathbf{A}(\mathbf{A}\,\Delta\mathbf{y})) + \mathbf{A}(\mathbf{A}(\mathbf{A}(\mathbf{A}\,\Delta\mathbf{y}))) + \ldots$$

Assuming that $\Delta\mathbf{y}$—the change in final demand—is the "drop in the pond," then succeeding terms are the ripples. Each "ripple" term is calculated as the previous "pond disturbance" multiplied by the direct requirements matrix. Thus, since each element in the direct requirements matrix is less than one, each ripple term is smaller than its predecessor. Indeed, it has been shown that after calculating about seven of these ripple terms that the power series approximation of impacts very closely estimates those produced by the Leontief Inverse directly.

In impacts analysis practice, $\Delta\mathbf{y}$ is a single column of expenditures with the same number of elements as there are rows or columns in the direct or technical requirements matrix. This set of elements is called an *impact vector*. This term is used because it is the *vector* of numbers that is used to estimate the *economic impacts* of the investment.

There are two types of changes in investments, and consequently economic impacts, generally associated with projects—*one-time impacts* and *recurring impacts*. One-time impacts are impacts that are attributable to an expenditure that occurs once over a limited period of time. For example, the impacts resulting from the construction of a project are one-time impacts. Recurring impacts are impacts that continue permanently as a result of new or expanded ongoing expenditures. The ongoing operation of a new train station, for example, generates recurring impacts to the economy. Examples of changes in economic activity are investments in the preservation of old homes, tourist expenditures, or the expenditures required to run a historical site. Such activities are considered changes in final demand and can be either positive or negative. When the activity is not made in an industry, it is generally not well represented by the input-output model. Nonetheless, the activity can be represented by a special set of elements that are similar to a column of the transactions matrix. This set of elements is called an economic

disturbance or impact vector. The latter term is used because it is the vector of numbers that is used to estimate the impacts. In this study, the impact vector is estimated by multiplying one or more economic *translators* by a dollar figure that represents an investment in one or more projects. The term translator is derived from the fact that such a vector *translates* a dollar amount of an activity into its constituent purchases by industry.

One example of an industry multiplier is shown in figure 4. In this example, the activity is the preservation of a historic home. The *direct impact* component consists of purchases made specifically for the construction project from the producing industries. The *indirect impact* component consists of expenditures made by producing industries to support the purchases made for this project. Finally, the *induced impact* component focuses on the expenditures made by workers involved in the activity on-site and in the supplying industries.

FIGURE 4
Components of the Multiplier for the
Historic Rehabilitation of a Single-Family Residence

DIRECT IMPACT	INDIRECT IMPACT	INDUCED IMPACT
Excavation/Construction Labor Concrete Wood Bricks Equipment Finance and Insurance	Production Labor Steel Fabrication Concrete Mixing Factory and Office Expenses Equipment Components	Expenditures by wage earners on-site and in the supplying industries for food, clothing, durable goods, entertainment

REGIONAL INPUT-OUTPUT ANALYSIS

Because of data limitations, regional input-output analysis has some considerations beyond those for the nation. The main considerations concern the depiction of regional technology and the adjustment of the technology to account for interregional trade by industry.

In the regional setting, local technology matrices are not readily available. An accurate region-specific technology matrix requires a survey of a representative sample of organizations for each industry to be depicted in the model. Such surveys are extremely expensive.[1] Because of the expense, regional analysts have tended to use national technology as a surrogate for regional technology. This substitution does not affect the accuracy of the model as long as local industry technology does not vary widely from the nation's average.[2]

[1]The most recent statewide survey-based model was developed for the State of Kansas in 1986 and cost on the order of $60,000 (in 1990 dollars). The development of this model, however, leaned heavily on work done in 1965 for the same state. In addition the model was aggregated to the 35-sector level, making it inappropriate for many possible applications since the industries in the model do not represent the very detailed sectors that are generally analyzed.

[2]Only recently have researchers studied the validity of this assumption. They have found that large urban areas may have technology in some manufacturing industries that differs in a statistically significant way from the national average. As will be discussed in a subsequent paragraph, such differences may be unimportant after accounting for trade patterns.

Even when local technology varies widely from the nation's average for one or more industries, model accuracy may not be affected much. This is because interregional trade may mitigate the error that would be induced by the technology. That is, in estimating economic impacts via a regional input-output model, national technology must be regionalized by a vector of regional purchase coefficients,[3] **r**, in the following manner:

$$(\mathbf{I}-\mathbf{rA})^{-1}\,\mathbf{r}\cdot\Delta\mathbf{y}$$

or

$$\mathbf{r}\cdot\Delta\mathbf{y} + \mathbf{rA}\,(\mathbf{r}\cdot\Delta\mathbf{y}) + \mathbf{rA}(\mathbf{rA}\,(\mathbf{r}\cdot\Delta\mathbf{y})) + \mathbf{rA}(\mathbf{rA}(\mathbf{rA}\,(\mathbf{r}\cdot\Delta\mathbf{y}))) + \ldots$$

where the vector-matrix product **rA** is an estimate of the region's direct requirements matrix. Thus, if national technology coefficients—which vary widely from their local equivalents—are multiplied by small RPCs, the error transferred to the direct requirements matrices will be relatively small. Indeed, since most manufacturing industries have small RPCs and since technology differences tend to arise due to substitution in the use of manufactured goods, technology differences have generally been found to be minor source error in economic impact measurement. Instead, RPCs and their measurement error due to industry aggregation have been the focus of research on regional input-output model accuracy.

A COMPARISON OF THREE MAJOR REGIONAL ECONOMIC IMPACT MODELS

In the United States there are three major vendors of regional input-output models. They are U.S. Bureau of Economic Analysis's (BEA) RIMS II multipliers, Minnesota IMPLAN Group Inc.'s (MIG) IMPLAN Pro model, and CUPR's own R/ECON™ I–O model. CUPR has had the privilege of using them all. (R/Econ™ I–O builds from the PC I–O model produced by the Regional Science Research Corporation's (RSRC).)

Although the three systems have important similarities, there are also significant differences that should be considered before deciding which system to use in a particular study. This document compares the features of the three systems. Further discussion can be found in Brucker, Hastings, and Latham's article in the Summer 1987 issue of *The Review of Regional Studies* entitled "Regional Input-Output Analysis: A Comparison of Five Ready-Made Model Systems." Since that date, CUPR and MIG have added a significant number of new features to PC I–O (now, R/ECON™ I–O) and IMPLAN, respectively.

Model Accuracy

RIMS II, IMPLAN, and R/ECON™ I–O all employ input-output (I–O) models for estimating impacts. All three regionalized the U.S. national I–O technology coefficients table at the highest levels of disaggregation (more than 500 industries). Since aggregation of sectors has been shown to be an important source of error in the calculation of impact multipliers, the retention of

[3]A regional purchase coefficient (RPC) for an industry is the proportion of the region's demand for a good or service that is fulfilled by local production. Thus, each industry's RPC varies between zero (0) and one (1), with one implying that all local demand is fulfilled by local suppliers. As a general rule, agriculture, mining, and manufacturing industries tend to have low RPCs, and both service and construction industries tend to have high RPCs.

maximum industrial detail in these regional systems is a positive feature that they share. The systems diverge in their regionalization approaches, however. The difference is in the manner that they estimate regional purchase coefficients (RPCs), which are used to regionalize the technology matrix. An RPC is the proportion of the region's demand for a good or service that is fulfilled by the region's own producers rather than by imports from producers in other areas. Thus, it expresses the proportion of the purchases of the good or service that do not leak out of the region, but rather feed back to its economy, with corresponding multiplier effects. Thus, the accuracy of the RPC is crucial to the accuracy of a regional I–O model, since the regional multiplier effects of a sector vary directly with its RPC.

The techniques for estimating the RPCs used by CUPR and MIG in their models are theoretically more appealing than the location quotient (LQ) approach used in RIMS II. This is because the former two allow for crosshauling of a good or service among regions and the latter does not. Since crosshauling of the same general class of goods or services among regions is quite common, the CUPR-MIG approach should provide better estimates of regional imports and exports. Statistical results reported in Stevens, Treyz, and Lahr (1989)[4] confirm that LQ methods tend to overestimate RPCs. By extension, inaccurate RPCs may lead to inaccurately estimated impact estimates.

Further, the estimating equation used by CUPR to produce RPCs should be more accurate than that used by MIG. The difference between the two approaches is that MIG estimates RPCs at a more aggregated level (two-digit SICs, or about 86 industries) and applies them at a desegregate level (over 500 industries). CUPR both estimates and applies the RPCs at the most detailed industry level. The application of aggregate RPCs can induce as much as 50 percent error in impact estimates (Lahr and Stevens, 2002).

Although both R/ECON™ I–O and IMPLAN use an RPC-estimating technique that is theoretically sound and update it using the most recent economic data, some practitioners question their accuracy. The reasons for doing so are three-fold. First, the observations currently used to estimate their implemented RPCs are based on 30-year old trade relationships—the Commodity Transportation Survey (CTS) from the 1977 Census of Transportation. Second, the CTS observations are at the state level. Therefore, RPC's estimated for substate areas are extrapolated. Hence, there is the potential that RPCs for counties and metropolitan areas are not as accurate as might be expected. Third, the observed CTS RPCs are only for shipments of goods. The interstate provision of services is unmeasured by the CTS. IMPLAN replies on relationships from the 1977 U.S. Multiregional Input-Output Model that are not clearly documented. R/ECON™ I–O relies on the same econometric relationships that it does for manufacturing industries but employs expert judgment to construct weight/value ratios (a critical variable in the RPC-estimating equation) for the nonmanufacturing industries.

The fact that BEA creates the RIMS II multipliers gives it the advantage of being constructed from the full set of the most recent regional earnings data available. BEA is the main federal government purveyor of employment and earnings data by detailed industry. It therefore has access to the fully disclosed and disaggregated versions of these data. The other two model systems rely on older data from *County Business Patterns* and Bureau of Labor Statistic's Quarterly Covered Employment and Wage data, which have been "improved" by filling-in for

[4] Stevens, Benjamin H., George I. Treyz and Michael L. Lahr. (1989) "On the Comparative Accuracy of RPC Estimating Techniques, in Ronald E.Miller, Karen R. Polenske and Adam Z. Rose, eds., /Frontiers in Input•OutputAnalysis. /(Oxford University Press: New York), pp. 245•257.

any industries that have disclosure problems (this occurs when three or fewer firms exist in an industry or a region).

Model Flexibility

For the typical user, the most apparent differences among the three modeling systems are the level of flexibility they enable and the type of results that they yield. R/Econ™ I–O allows the user to make changes in individual cells of the 515-by-515 technology matrix as well as in the 11 515-sector vectors of region-specific data that are used to produce the regionalized model. The 11 sectors are: output, demand, employment per unit output, labor income per unit output, total value added per unit of output, taxes per unit of output (state and local), nontax value added per unit output, administrative and auxiliary output per unit output, household consumption per unit of labor income, and the RPCs. Te PC I–O model tends to be simple to use. Its User's Guide is straightforward and concise, providing instruction about the proper implementation of the model as well as the interpretation of the model's results.

The software for IMPLAN Pro is Windows-based, and its User's Guide is more formalized. Of the three modeling systems, it is the most user-friendly. The Windows orientation has enabled MIG to provide many more options in IMPLAN without increasing the complexity of use. Like R/ ECON ™ I–O, IMPLAN's regional data on RPCs, output, labor compensation, industry average margins, and employment can be revised. It does not have complete information on tax revenues other than those from indirect business taxes (excise and sales taxes), and those cannot be altered. Also like R/ECON™, IMPLAN allows users to modify the cells of the 538-by-538 technology matrix. It also permits the user to change and apply price deflators so that dollar figures can be updated from the default year, which may be as many as four years prior to the current year. The plethora of options, which are advantageous to the advanced user, can be extremely confusing to the novice. Although default values are provided for most of the options, the accompanying documentation does not clearly point out which items should get the most attention. Further, the calculations needed to make any requisite changes can be more complex than those needed for the R/ ECON ™ I–O model. Much of the documentation for the model dwells on technical issues regarding the guts of the model. For example, while one can aggregate the 538-sector impacts to the one- and two-digit SIC level, the current documentation does not discuss that possibility. Instead, the user is advised by the Users Guide to produce an aggregate model to achieve this end. Such a model, as was discussed earlier, is likely to be error ridden.

For a region, RIMS II typically delivers a set of 38-by-471 tables of multipliers for output, earnings, and employment; supplementary multipliers for taxes are available at additional cost. Although the model's documentation is generally excellent, use of RIMS II alone will not provide proper estimates of a region's economic impacts from a change in regional demand. This is because no RPC estimates are supplied with the model. For example, in order to estimate the impacts of rehabilitation, one not only needs to be able to convert the engineering cost estimates into demands for labor as well as for materials and services by industry, but must also be able to estimate the percentage of the labor income, materials, and services which will be provided by the region's households and industries (the RPCs for the demanded goods and services). In most cases, such percentages are difficult to ascertain; however, they are provided in the R/Econ™ I–O and IMPLAN models with simple triggering of an option. Further, it is impossible to change

any of the model's parameters if superior data are known. This model ought not to be used for evaluating any project or event where superior data are available or where the evaluation is for a change in regional demand (a construction project or an event) as opposed to a change in regional supply (the operation of a new establishment).

Model Results

Detailed total economic impacts for about 500 industries can be calculated for jobs, labor income, and output from R/ECON™ I–O and IMPLAN only. These two modeling systems can also provide total impacts as well as impacts at the one- and two-digit industry levels. RIMS II provides total impacts and impacts on only 38 industries for these same three measures. Only the manual for R/Econ™ I–O warns about the problems of interpreting and comparing multipliers and any measures of output, also known as the value of shipments.

As an alternative to the conventional measures and their multipliers, R/ECON™ I–O and IMPLAN provide results on a measure known as "value added." It is the region's contribution to the nation's gross domestic product (GDP) and consists of labor income, nonmonetary labor compensation, proprietors' income, profit-type income, dividends, interest, rents, capital consumption allowances, and taxes paid. It is, thus, the region's production of wealth and is the single best economic measure of the total economic impacts of an economic disturbance.

In addition to impacts in terms of jobs, employee compensation, output, and value added, IMPLAN provides information on impacts in terms of personal income, proprietor income, other property-type income, and indirect business taxes. R/ECON™ I–O breaks out impacts into taxes collected by the local, state, and federal governments. It also provides the jobs impacts in terms of either about 90 or 400 occupations at the users request. It goes a step further by also providing a return-on-investment-type multiplier measure, which compares the total impacts on all of the main measures to the total original expenditure that caused the impacts. Although these latter can be readily calculated by the user using results of the other two modeling systems, they are rarely used in impact analysis despite their obvious value.

In terms of the format of the results, both R/ECON™ I–O and IMPLAN are flexible. On request, they print the results directly or into a file (Excel® 4.0, Lotus 123®, Word® 6.0, tab delimited, or ASCII text). It can also permit previewing of the results on the computer's monitor. Both now offer the option of printing out the job impacts in either or both levels of occupational detail.

RSRC Equation

The equation currently used in the R/ECON™ I–O model for estimating RPCs is reported in Treyz and Stevens (1985).[5] In this paper, the authors show that they estimated the RPC from the 1977 CTS data by estimating the demands for an industry's production of goods or services that are fulfilled by local suppliers (*LS*) as

[5] Treyz, George I. and Benjamin H. Stevens. (1985) "The TFS Regional Modelling Methodology." /Regional Studies/. 19.

$$LS = D^{e(-1/x)}$$

and where for a given industry

$$x = k\, Z_1^{a1} Z_2^{a2}\, P_j\, Z_j^{aj}$$ and D is its total local demand.

Since for a given industry RPC = LS/D then

$$\ln\{-1/[\ln(\ln LS/\ln D)]\} = \ln k + a_1 \ln Z_1 + a_2 \ln Z_2 + S_j\, a_j \ln Z_j$$

which was the equation that was estimated for each industry.

This odd nonlinear form not only yielded high correlations between the estimated and actual values of the RPCs, it also assured that the RPC value ranges strictly between 0 and 1. The results of the empirical implementation of this equation are shown in Treyz and Stevens (1985, table 1).[6] The table shows that total local industry demand (Z_1), the supply/demand ratio (Z_2), the weight/value ratio of the good (Z_3), the region's size in square miles (Z_4), and the region's average establishment size in terms of employees for the industry compared to the nation's (Z_5) are the variables that influence the value of the RPC across all regions and industries. The latter of these maintain the least leverage on RPC values.

Because the CTS data are at the state level only, it is important for the purposes of this study that the local industry demand, the supply/demand ratio, and the region's size in square miles are included in the equation. They allow the equation to extrapolate the estimation of RPCs for areas smaller than states. It should also be noted here that the CTS data only cover manufactured goods. Thus, although calculated effectively making them equal to unity via the above equation, RPC estimates for services drop on the weight/value ratios. A very high weight/value ratio like this forces the industry to meet this demand through local production. Hence, it is no surprise that a region's RPC for this sector is often very high (0.89). Similarly, hotels and motels tend to be used by visitors from outside the area. Thus, a weight/value ratio on the order of that for industry production would be expected. Hence, an RPC for this sector is often about 0.25.

The accuracy of CUPR's estimating approach is exemplified best by this last example. Ordinary location quotient approaches would show hotel and motel services serving local residents. Similarly, IMPLAN RPCs are built from data that combine this industry with eating and drinking establishments (among others). The result of such aggregation process is an RPC that represents neither industry (a value of about 0.50) but which is applied to both. In the end, not only is the CUPR's RPC-estimating approach the most sound, but it is also widely acknowledged by researchers in the field as being state of the art.

But in the case of the U.S. Virgin Islands, CUPR had direct access to data on both domestic and international trade being moved on to and off of the Islands. To estimate RPCs in this case,

[6] Treyz, George I. and Benjamin H. Stevens. (1985) "The TFS Regional Modelling Methodology," /Regional Studies/, 19, 547-562.

CUPR simply estimated demand from techniques described in Treyz and Stevens (1985)[7], and then estimated the amount of that demand supplied by local USVI industries (the *LS* above) by subtracting imports from the demand total. As mentioned previously, the RPC is the share of demand that is met by local supplies or $RPC = LS / D$. This then was estimated for each USVI industry in the input-output model with RPC of zeros where the industry does not exist in the USVI.

Advantages and Limitations of Input-Output Analysis

Input-output modeling is one of the most accepted means for estimating economic impacts. This is because it provides a concise and accurate means for articulating the interrelationships among industries. The models can be quite detailed. For example, the current U.S. model currently has about 500 industries representing many six-digit North American Industrial Classification System (NAICS) codes. CUPR's model used in this study has the same number. Further, the industry detail of input-output models provides not only a consistent and systematic approach but also more accurately assesses multiplier effects of changes in economic activity. Research has shown that results from more aggregated economic models can have as much as 50 percent error inherent in them. Such large errors are generally attributed to poor estimation of regional trade flows resulting from the aggregation process.

Input-output models also can be set up to capture the flows among economic regions. For example, the model used in this study could have estimated impacts for each major island as well as the total territory economy, if the data on employment and imports had been made available.

The limitations of input-output modeling should also be recognized. The approach makes several key assumptions. First, the input-output model approach assumes that there are no economies of scale to production in an industry; that is, the proportion of inputs used in an industry's production process does not change regardless of the level of production. This assumption will not work if the technology matrix depicts an economy of a recessional economy (e.g., 1982) and the analyst is attempting to model activity in a peak economic year (e.g., 1989). In a recession year, the labor-to-output ratio tends to be excessive because firms are generally reluctant to lay off workers when they believe an economic turnaround is about to occur.

A less-restrictive assumption of the input-output approach is that technology is not permitted to change over time. It is less restrictive because the technology matrix in the United States is updated frequently and, in general, production technology does not radically change over short periods.

Finally, the technical coefficients used in most regional models are based on the assumption that production processes are spatially invariant and are well represented by the nation's average technology.

[7] Treyz, George I. and Benjamin H. Stevens. (1985) "The TFS Regional Modelling Methodology," /Regional Studies/, 19, 547-562.