

## **Appendix M**

# **UPDATE OF THE ECONOMIC BENEFITS OF THE DISTRICT'S WATERWAYS IN BROWARD COUNTY**

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## I. INTRODUCTION

The economic benefits of marine-related activities on the Florida Inland Navigation District's (the District) Waterways in Broward County were estimated in *An Economic Analysis of the District's Waterways in Broward County*, dated July 2008 (referred to as the original analysis). Benefits were estimated for existing conditions and two Waterways maintenance scenarios, one assuming a cessation of maintenance and another assuming a higher state of maintenance. The purpose of this analysis is to update the economic benefits of the Waterways in Broward County, as presented in the original analysis, to current values using industry accepted methods. The impact of the 2007-2009 U.S. economic recession on marine-related businesses in the county are also estimated. In addition, fuel taxes and sales tax revenues attributable to activities associated with the Waterways, which were not estimated in the original analysis, are estimated in this analysis. For the purpose of this report, the District's Waterways (the Waterways) are defined as all navigable waterways within the District's boundaries, including the Intracoastal Waterway and all waterways that are physically connected to it.

The purpose of the original analysis was twofold: (1) to identify and quantify the total economic benefit of the Waterways in the county; and (2) to estimate the influence of the Waterways on property values in the county. The original analysis included an explanation of economic benefits, a literature review of economic benefits of marine activities in Florida and in other states, an explanation of the methods used in estimating economic benefits, details of the data collection and manipulation required for the analysis, quantification of direct marine-related business purchases, and estimation of the economic benefits of the Waterways under existing conditions, assuming a cessation of maintenance, and assuming a higher state of maintenance. For this updated analysis, the estimation of the influence of the Waterways on property values in the county will not be addressed.

As the local sponsor of the Waterways, the District shares in the responsibility for the operation and maintenance of the Waterways. With reduced federal funding, the local sponsors of the nation's inland navigation systems are being required to shoulder a larger portion of the maintenance costs. The District has made a decision not to let the Waterways deteriorate by deferring maintenance projects and has elected instead to fund this budgetary shortfall. To meet these responsibilities, the District may invest up to \$800 million in maintaining and operating the

Waterways over the next 50 years. With such a large potential investment, the District needs to inform the general public as well as federal, state, and local public officials regarding the economic importance of expending these monies to meet the new needs of the Waterways. This update is intended to address that need.

This analysis is divided into three sections: (1) this introduction; (2) a summary of the findings of the original analysis; and (3) the update of the economic benefits of the Waterways under four scenarios. Section I includes an introduction to the report, a summary of the findings, and a description of the Intracoastal Waterway in Broward County.

Section II summarizes the findings of the original analysis as presented in *An Economic Analysis of the District's Waterways in Broward County*, dated July 2008. Economic benefits are estimated for each of the three scenarios evaluated: (1) prior existing conditions (at the time of the original analysis in 2007); (2) assuming a cessation of maintenance; and (3) assuming a higher state of maintenance. The benefits are presented as measured by changes in business volume, personal income, and jobs.

Section III presents the methodology and findings of the update of the economic benefits of the Waterways. Updated impacts for four scenarios are presented: (1) current existing conditions (which have been affected by the recession); (2) assuming a cessation of maintenance; (3) assuming a higher state of maintenance; and (4) assuming that the 2007-2009 U.S. economic recession did not occur. Impacts are measured as changes in business volume, personal income, jobs, and tax revenues.

## **Summary of Findings**

A summary of the findings of the economic benefits of the four scenarios evaluated are presented in Table M-1. Current updated benefits in 2010 dollars include \$4.391 billion in business volume, \$975.0 million in personal income, 21,111 jobs, and \$178.3 million in tax revenues. Compared to the findings in the original analysis, this is a decrease of \$1.688 billion in business volume, \$394.6 million in personal income, and 10,732 jobs. The decrease in benefits is primarily due to decreased spending on marine-related activities in response to the 2007-2009 U.S. economic recession. Tax revenues were not estimated in the original analysis. The economic benefits of the Waterways assuming decreased maintenance of the Waterways include \$2.318 billion in business volume, \$506.0 million in personal income, 10,476 jobs, and

\$93.7 million in tax revenues. This is a 47 to 50 percent decrease in benefits compared to existing conditions. The economic benefits of the Waterways assuming a higher state of maintenance of the Waterways include \$4.987 billion in business volume, \$1.114 billion in personal income, 24,205 jobs, and \$202.9 million in tax revenues. This is an approximately 14 percent increase in benefits compared to existing conditions. If the 2007-2009 U.S. economic recession had not occurred, economic benefits of the Waterways in 2009 would have been approximately \$7.54 billion in business volume, \$1.370 billion in personal income, 35,899 jobs, and \$300.5 million in tax revenues. In other words, the recession reduced the benefits of the Waterways in Broward County by \$3.031 billion in business volume, \$668.4 million in personal income, 14,788 jobs, and \$122.2 million in tax revenues.

**Table M-1. Summary of Total Economic Benefits of the Waterways in Broward County**

Activity	Business Volume (Millions)				Personal Income (Millions)				Employment			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Current Existing Impacts	\$3,150.0	\$625.8	\$615.6	<b>\$4,391.4</b>	\$549.9	\$229.5	\$195.6	<b>\$975.0</b>	11,584	4,683	4,844	<b>21,111</b>
Three-Foot Draft Restriction Impacts	\$1,652.4	\$346.5	\$319.5	<b>\$2,318.4</b>	\$272.0	\$132.6	\$101.5	<b>\$506.0</b>	5,284	2,677	2,515	<b>10,476</b>
Ten-Foot Draft Restriction Impacts	\$3,577.3	\$706.1	\$703.0	<b>\$4,986.5</b>	\$632.0	\$258.1	\$223.4	<b>\$1,113.5</b>	13,395	5,278	5,532	<b>24,205</b>
Impacts Assuming No Recession	\$5,356.3	\$1,028.9	\$1,037.5	<b>\$7,422.7</b>	\$941.1	\$372.6	\$329.7	<b>\$1,643.4</b>	20,104	7,632	8,164	<b>35,899</b>

### The Intracoastal Waterway

The Intracoastal Waterway is a 2,640-mile federally and locally maintained system of natural waterbodies and connecting canals paralleling the Atlantic and Gulf coasts of the United States that encompasses the Atlantic Intracoastal Waterway (AIWW) and the Gulf Intracoastal Waterway (GIWW). The purpose of the waterway is to provide a protected environment for vessels moving coastwise, particularly shallow-draft commercial and recreational vessels.

The Gulf Intracoastal Waterway is a 1,100-mile channel between Brownsville, Texas, and St. Marks, Florida, south of Tallahassee. The channel is 150 feet wide and 12 feet deep and runs mainly behind barrier beaches.

The Atlantic Intracoastal Waterway is a 1,391-mile channel between Trenton, New Jersey, and Miami, Florida. A southward extension from Miami to Key West was authorized but never constructed. The channels from Trenton to St. Johns River in Florida, on which Jacksonville is located, are 12 feet deep, 90 feet wide through land areas, and generally 150 or 300 feet wide in open water areas. The section from the Georgia-Florida line to St. Johns River is 125 feet wide. The channel south from St. Johns River was constructed as an independent

project under the title *Intracoastal Waterway, Jacksonville to Miami, Florida*. An early authorization called for a 12-foot by 125-foot channel throughout, but was modified to a 10-foot depth from Fort Pierce south to Miami. The project, which was completed in its modified form in 1965, is 370 miles long and follows coastal rivers and lagoons past numerous tourism-oriented communities.

### **The Intracoastal Waterway in Broward County**

The Intracoastal Waterway enters Broward County just north of waterway Mile 1050. The waterway proceeds south on Hillsboro River for about four miles, past Deerfield Beach and Lighthouse Point, to Hillsboro Inlet. Past the inlet, the waterway curves west then south as it proceeds in a manmade cut for seven miles to Fort Lauderdale, considered to be the yachting center of the world. This stretch of the waterway passes by Pompano Beach and Lauderdale-by-the-Sea and numerous terminal canals in residential areas that allow direct boating access to the Intracoastal Waterway. The confluence of the Intracoastal Waterway and Middle River is at the north end of Fort Lauderdale and allows boater access from the waterway farther west into the county. In addition, there are numerous manmade canals in Fort Lauderdale, between the confluences of Middle River and New River with the Intracoastal Waterway, that serve the large boating population in the county. In Fort Lauderdale, the waterway curves to the west towards New River, then turns south towards Port Everglades and past the deep-draft inlet at Port Everglades.

Past Port Everglades, the waterway proceeds south on a fairly straight channel for approximately nine miles to the county line at Mile 1075. This nine-mile reach includes Dania Beach, the Dania Cut-Off Canal, Hollywood Beach, and the city of Hallandale. This portion of the waterway includes extensive residential development along its shores. In addition, Dania Cut-Off Canal along with New River in Fort Lauderdale are two of the major boating centers in the county, harboring numerous marinas, boatyards, and marine-related businesses.



## II. SUMMARY OF FINDINGS OF THE ORIGINAL ANALYSIS

Under existing conditions, the original analysis estimated that the 1,767 marine-related businesses in Broward County generated direct sales of \$4.24 billion in 2007. A regional economic impact model (IMPLAN) was used to estimate the direct, indirect, and induced (total) benefits of the marine businesses. The total benefits of marine-related businesses in 2007 were estimated as \$5.98 billion in business sales, \$4.89 billion in personal income, and 31,344 jobs. Non-marine-related businesses also were shown to benefit from marine activities in the county. Boaters in the county purchased a total of \$82.1 million in gasoline, food, drinks, and ice for consumption on the county’s Waterways. These non-marine-related purchases resulted in a total benefit of \$103.9 million in business activity, \$20.6 million in personal income, and 499 jobs. The economic benefits of the Waterways under existing conditions (the benefit of marine-related businesses and purchases by recreational boaters) totaled \$6.08 billion in business volume, \$1.37 billion in personal income, and 31,843 jobs (see Table M-2). Tax revenues attributable to the Waterways were not estimated in the original analysis.

**Table M-2. Summary of 2007 Total Economic Benefits of the Waterways in Broward County, as Presented in the Original Analysis**

Waterway Maintenance Scenario	Business Volume (Millions)				Personal Income (Millions)				Employment			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
2007 Total Existing Impacts	\$4,325.8	\$946.6	\$807.2	<b>\$6,079.6</b>	\$737.1	\$364.2	\$268.3	<b>\$1,369.6</b>	17,524	7,415	6,904	<b>31,843</b>
2007 Three-Foot Draft Restriction Impacts	\$2,207.8	\$546.0	\$424.1	<b>\$3,177.9</b>	\$353.8	\$224.3	\$141.1	<b>\$719.2</b>	7,845	4,445	3,629	<b>15,919</b>
2007 Ten-Foot Draft Restriction Impacts	\$4,923.3	\$1,064.9	\$919.0	<b>\$6,907.2</b>	\$846.1	\$408.0	\$305.3	<b>\$1,559.4</b>	20,245	8,343	7,858	<b>36,446</b>

Marine-related businesses in Broward County were estimated to generate direct sales of \$2.172 billion in 2007, assuming cessation of maintenance of the Waterways. The total benefit of marine businesses in 2007 under this scenario was estimated as \$3.13 billion in business sales, \$710.1 million in personal income, and 15,699 jobs. In addition, boaters in the county purchased a total of \$36.3 million in gasoline, food, drinks, and ice for consumption on the county’s Waterways. These non-marine-related purchases resulted in a total benefit of \$45.8 million in business activity, \$9.1 million in personal income, and 220 jobs. The total combined economic benefits of the Waterways assuming three-foot vessel draft restrictions, as presented in the original analysis, were \$3.18 billion in business volume, \$719.2 million in personal income, and 15,919 jobs.

In the original analysis it was estimated that in 2007, marine-related businesses in Broward County would generate direct sales of \$4.82 billion if vessel draft restrictions were increased to 10 feet MLW. The total benefit of marine-related business under this scenario was estimated as \$6.80 billion in business sales, \$1.54 billion in personal income, and 35,947 jobs. Boaters were estimated to purchase a total of \$82.1 million in gasoline, food, drinks, and ice for consumption on the county's Waterways, which resulted in a total benefit of \$103.9 million in business activity, \$20.6 million in personal income, and 499 jobs. The total combined economic benefits of the Waterways, assuming 10-foot vessel draft restrictions, totaled \$6.91 billion in business volume, \$1.56 billion in personal income, and 36,446 jobs.

### **III. UPDATED ECONOMIC BENEFITS OF THE WATERWAYS**

#### **Economic Benefits Under Current Existing Conditions**

##### **Marine-Related Business Activity**

The original analysis stated that total direct business sales (as calculated from the survey-adjusted database of marine-related businesses) were estimated at \$4.24 billion. The data presented in the original analysis that outlined the direct impact of marine-related businesses in Broward County were updated to current values using the estimated increase in gross sales as recorded by the Florida Department of Revenue (FDOR) Kind Code 28. FDOR classifies businesses by type and reports the gross sales receipts and sales tax collections for each business type. Business types are classified as Kind Codes. Kind Code 28 consists of *Motorboats, Yachts, Marine Parts, Accessories, and Boat Dealers*. According to FDOR, in 2007, the year that the original analysis was conducted, the firms classified as Kind Code 28 reported \$1.7 billion in gross retail sales. In 2009, the latest year that data is available, Kind Code 28 firms reported total gross sales of \$1.16 billion. This constitutes a decrease of 31.5 percent in gross sales over the two-year period. The percent change in reported Kind Code 28 gross sales was applied to the direct marine-related business activity (obtained from the original analysis) to estimate the direct current impact of marine-related businesses.

Port operations are influenced less by local marine-related sales and more by macro-economic factors within the region served by the port. For this reason, the direct impact of port operations was updated to current values using the percent change in gross sales of all Kind Codes for the State of Florida. From 2007 to 2009, reported gross sales for the State of Florida decreased by 12 percent, from \$901.3 billion in 2007 to \$796.8 billion in 2009.

Table M-3 presents the 2007 and updated 2009 marine-related business volume, aggregated by business type. As a result of the recession, total marine-related business activity is estimated to have decreased from \$4.24 billion in 2007 to \$2.99 billion in 2009.

The original analysis included the distribution of business volume for each marine-related business type and is reproduced here as Table M-4. For this analysis, the business activity distribution (Table M-4) for each business type was applied to the 2009 updated marine-

**Table M-3. Total Direct Marine-Related Business Volume in Broward County,  
Aggregated by Business Type, 2007 and 2009**

<b>Business Type</b>	<b>2007</b>	<b>2009</b>
	<b>Total Marine Business Volume</b>	<b>Total Marine Business Volume</b>
Boat Dealers	\$425,205,307	\$291,473,457
Yacht Brokers	\$429,160,771	\$294,184,883
Marinas	\$145,383,696	\$99,658,889
Boat Yards	\$66,244,010	\$45,409,524
Canvas Products/Upholstery	\$54,673,245	\$37,477,895
Boat Repairs	\$97,414,262	\$66,776,381
Outboard Repairs	\$159,057,200	\$109,031,922
Marine Equipment/Electronics	\$341,147,939	\$233,853,076
Marine Construction	\$117,008,058	\$80,207,708
Auto Parts	\$3,193,814	\$2,189,324
Tackle/Dive Equipment	\$40,656,964	\$27,869,892
Marine/Sporting Goods Retail	\$171,110,451	\$117,294,290
Wholesaler	\$713,011,203	\$488,761,163
Boat Manufacturer	\$254,074,000	\$174,164,870
Equipment Manufacturer	\$240,189,976	\$164,647,528
Ski/Boating Instruction	\$7,383,158	\$5,061,072
Boat Trailers	\$3,018,977	\$2,069,475
A/C Heating	\$45,834,167	\$31,418,806
Signs	\$2,989,966	\$2,049,588
Water Transportation	\$86,120,550	\$59,034,669
Clubs/Associations	\$8,533,627	\$5,849,705
Engineering/Surveyors	\$31,385,301	\$21,514,271
Consultants	\$14,857,769	\$10,184,834
Legal Services	\$1,795,200	\$1,230,589
Insurance	\$35,237,172	\$24,154,685
Interior Design	\$8,664,059	\$5,939,115
Business/Personal Services	\$67,422,749	\$46,217,536
Storage	\$1,534,909	\$1,052,163
Boating Services	\$118,873,261	\$81,486,284
Auto/Cycle Dealers	\$30,243,972	\$20,731,903
Camp/Resort/Lodging	\$204,680	\$140,306
Restaurant/Seafood Market	\$31,373,746	\$21,506,350
Miscellaneous Retail/Other	\$28,178,674	\$19,316,164
Charter Boats/Rentals	\$77,593,025	\$53,189,146
Port Tenants	\$385,720,289	\$341,005,698
<b>Total</b>	<b>\$4,244,496,147</b>	<b>\$2,986,153,162</b>

**Table M-4. Distribution of Direct Marine-Related Business Revenue by Business Type and Business Activities**

Business Type	Business Activities									
	Percent Construction	Percent Transportation	Percent Retail Trade	Percent Boat Sales	Percent Used	Percent Manufacturing	Percent Wholesale	Percent Finance	Percent Service	
Boat Dealers	0.00%	0.00%	65.75%	9.95%	0.00%	0.00%	1.56%	0.44%	22.30%	
Yacht Brokers	0.00%	0.04%	5.36%	79.95%	0.95%	0.00%	0.00%	0.13%	13.56%	
Mainas	0.00%	0.00%	23.14%	1.45%	0.00%	0.00%	0.00%	0.43%	74.97%	
Boat Yards	0.00%	0.00%	28.30%	5.23%	41.40%	0.00%	6.95%	0.00%	18.12%	
Canvas Products/Upholstery	0.99%	0.00%	11.05%	0.00%	70.07%	0.00%	1.91%	0.00%	15.98%	
Boat Repairs	0.00%	0.00%	24.58%	3.44%	5.16%	0.00%	18.93%	0.00%	47.90%	
Outboard Repairs	0.00%	0.00%	7.58%	0.52%	2.14%	0.00%	53.98%	0.00%	35.77%	
Marine Equipment/Electronics	0.00%	0.28%	68.56%	0.00%	3.65%	0.00%	4.68%	0.00%	22.83%	
Marine Construction	93.23%	0.00%	0.00%	0.00%	0.48%	0.00%	0.00%	0.00%	6.29%	
Auto Parts	0.00%	0.00%	87.22%	0.00%	3.19%	0.00%	6.39%	0.00%	3.19%	
Tackle/Dive Equipment	0.00%	8.36%	47.34%	0.00%	0.47%	0.00%	0.31%	0.00%	43.51%	
Marine/Sporting Goods Retail	0.06%	0.19%	94.14%	0.19%	0.06%	0.00%	5.28%	0.00%	0.08%	
Wholesaler	0.00%	0.41%	1.43%	0.00%	1.22%	0.00%	87.53%	0.00%	9.42%	
Boat Manufacturer	0.00%	0.00%	5.98%	5.83%	88.20%	0.00%	0.00%	0.00%	0.00%	
Equipment Manufacturer	0.00%	0.00%	3.08%	0.00%	85.95%	0.00%	10.06%	0.00%	0.91%	
Ski/Boating Instruction	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
Boat Trailers	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
A/C Heating	0.06%	0.00%	24.92%	0.00%	24.92%	0.00%	0.00%	0.00%	50.09%	
Signs	0.00%	0.00%	15.13%	0.00%	3.26%	0.00%	67.62%	0.00%	13.99%	
Water Transportation	0.00%	3.83%	0.00%	0.00%	3.83%	0.00%	0.00%	0.00%	92.34%	
Clubs/Associations	0.00%	0.00%	31.56%	2.51%	2.51%	0.00%	0.00%	0.00%	63.43%	
Engineering/Surveyors	0.00%	0.00%	0.00%	0.00%	1.01%	0.00%	0.00%	0.00%	98.99%	
Consultants	0.00%	0.00%	0.00%	0.00%	13.78%	0.00%	0.00%	0.00%	86.22%	
Legal Services	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
Insurance	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
Interior Design	0.00%	0.00%	38.49%	0.00%	54.69%	0.00%	0.00%	0.00%	6.82%	
Business/Personal Services	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	91.24%	
Storage	0.00%	0.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	95.00%	
Boating Services	0.00%	0.06%	74.02%	0.00%	3.39%	0.00%	0.00%	6.46%	16.07%	
Auto/Cycle Dealers	0.00%	0.00%	50.00%	0.00%	20.00%	0.00%	15.00%	5.00%	10.00%	
Camp/Resort/Lodging	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
Restaurant/Seafood Market	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Miscellaneous Retail/Other	0.00%	0.00%	93.95%	0.00%	1.75%	0.00%	2.71%	0.00%	1.59%	
Charter Boats/Rentals	0.00%	0.00%	5.49%	2.98%	0.00%	0.00%	0.00%	0.00%	91.52%	
Port Tenants	0.00%	91.75%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	8.25%	
<b>Total</b>	<b>2.59%</b>	<b>8.60%</b>	<b>24.34%</b>	<b>9.73%</b>	<b>13.28%</b>	<b>18.79%</b>	<b>0.43%</b>	<b>22.26%</b>		

related business volume (Table M-3) to quantify the updated dollar value of sales of each business type generated by each type of activity. For instance, as illustrated in Table M-4, on average 65.75 percent of the business volume generated by a boat dealer would actually be retail trade, 9.95 percent would be used boat sales, 1.56 percent would be wholesale trade, 0.44 percent would be from finance, and 23.3 percent would be services. Applying the percent distribution by business type and activity in Table M-4 to the 2009 updated marine-related business volume of \$2.99 billion in Table M-3 results in the summary of updated business volume distributed by business activity, as presented in Table M-5.

The values presented in Table M-5 are the total business volume of marine-related businesses. For instance, the \$708.1 million in retail sales, the \$283 million in used boat sales, and the \$546.7 million in wholesale sales are the amounts that consumers paid (consumer prices) to businesses to purchase goods, rather than the total economic benefit of the retail sector. Regional impact models are developed using producer prices. In order to use the values in Table M-5 in a regional impact model, the consumer prices must be converted to producer prices. This is done within the model using margins that represent the difference between producer prices and consumer prices. When a product is purchased at the retail level, the consumer is paying for the manufacturing, distribution, transportation, and marketing of the product. For instance, if a consumer pays \$100 for an item, he may be paying \$50 for the manufacture of the product, \$5 for the transportation of the product to the wholesaler, \$15 to the wholesaler for his services, \$5 to transport the item to the retailer, and only \$25 to the retailer. If the manufacturer and wholesaler are located outside of the economy being evaluated, then only the retail portion or the retail margin (\$25) will result in an economic benefit to the local economy; the remaining portion of the sale (\$75) will “leak” out of the economy and actually result in economic benefits in another economy.

To illustrate, when a boat dealer in Broward County sells a boat and motor for \$30,000, that total amount would appear in the marine-related database used in this analysis and in the gross retail sales as reported in FDOR’s Kind Code 28. But only a portion of the \$30,000, the retail margin (which for boat and automobile dealers is approximately 15 to 18 percent of the purchase price), will remain in the local economy and generate benefits. The boat dealer will use most of the proceeds from the sale to pay the manufacturer for the boat and motor. Because the boat and motor will probably be manufactured outside of the county, most of the proceeds of the

**Table M-5. Total Updated Direct Marine-Related Business Revenue by Business**

Business Type	Total Marine Business Volume	Construction Volume	Transportation Volume	Retail Trade Volume	Used Boat Sales Volume	Manufacturing Volume	Wholesale Trade Volume	Finance Volume	Service Volume
Boat Dealers	\$291,473,457	\$0	\$0	\$191,631,888	\$28,995,732	\$0	\$4,540,478	\$1,293,600	\$65,011,769
Yacht Brokers	\$294,184,883	\$0	\$121,289	\$15,780,329	\$235,205,923	\$2,799,009	\$0	\$388,763	\$39,889,601
Marinas	\$99,658,889	\$0	\$0	\$23,062,391	\$1,446,492	\$0	\$0	\$431,076	\$74,718,955
Boat Yards	\$45,409,524	\$0	\$0	\$12,851,752	\$2,374,192	\$18,797,379	\$3,156,571	\$0	\$8,229,631
Canvas Products/Upholstery	\$37,477,895	\$371,017	\$0	\$4,142,230	\$0	\$26,259,884	\$717,347	\$0	\$5,987,416
Boat Repairs	\$66,776,381	\$0	\$0	\$16,410,623	\$2,297,760	\$3,446,640	\$12,637,693	\$0	\$31,983,652
Outboard Repairs	\$109,031,922	\$0	\$3,222	\$8,267,993	\$566,053	\$2,333,053	\$58,859,627	\$0	\$39,001,952
Marine Equipment/Electronics	\$233,853,076	\$0	\$645,596	\$160,336,174	\$0	\$8,531,544	\$10,950,488	\$0	\$53,389,275
Marine Construction	\$80,207,708	\$74,776,478	\$0	\$0	\$0	\$387,943	\$0	\$0	\$5,043,283
Auto Parts	\$2,189,324	\$0	\$0	\$1,909,537	\$0	\$69,946	\$139,892	\$0	\$69,946
Tackle/Dive Equipment	\$27,869,892	\$0	\$2,331,270	\$13,193,794	\$0	\$131,368	\$85,947	\$0	\$12,127,503
Marine/Sporting Goods Retail	\$117,294,290	\$73,362	\$220,089	\$110,426,276	\$220,089	\$73,362	\$6,189,412	\$0	\$91,705
Wholesaler	\$488,761,163	\$0	\$1,981,958	\$6,981,201	\$0	\$5,945,871	\$427,813,871	\$0	\$46,038,252
Boat Manufacturer	\$174,164,870	\$0	\$0	\$10,408,799	\$10,145,502	\$153,610,570	\$0	\$0	\$0
Equipment Manufacturer	\$164,647,528	\$5,963	\$1,987	\$5,070,435	\$0	\$141,521,493	\$16,556,925	\$0	\$1,490,719
Ski/Boating Instruction	\$5,061,072	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,061,071
Boat Trailers	\$2,069,475	\$0	\$0	\$2,069,475	\$0	\$0	\$0	\$0	\$0
A/C Heating	\$31,418,806	\$19,887	\$0	\$7,829,843	\$0	\$7,829,843	\$0	\$0	\$15,739,232
Signs	\$2,049,588	\$0	\$0	\$310,158	\$0	\$66,786	\$1,385,862	\$0	\$286,782
Water Transportation	\$59,034,669	\$0	\$2,261,865	\$0	\$146,566	\$2,261,865	\$0	\$0	\$54,510,941
Clubs/Associations	\$5,849,705	\$0	\$0	\$1,846,011	\$0	\$146,566	\$0	\$0	\$3,710,564
Engineering/Surveyors	\$21,514,271	\$0	\$0	\$0	\$0	\$216,874	\$0	\$0	\$21,297,397
Consultants	\$10,184,834	\$0	\$0	\$0	\$0	\$1,403,198	\$0	\$0	\$8,781,635
Legal Services	\$1,230,589	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,230,589
Insurance	\$24,154,685	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$24,154,686
Interior Design	\$5,939,115	\$0	\$0	\$2,285,756	\$0	\$3,248,099	\$0	\$0	\$405,260
Business/Personal Services	\$46,217,536	\$0	\$0	\$0	\$0	\$0	\$0	\$4,049,144	\$42,168,392
Storage	\$1,052,163	\$0	\$0	\$52,608	\$0	\$0	\$0	\$0	\$999,555
Boating Services	\$81,486,284	\$0	\$52,670	\$60,316,575	\$0	\$2,762,714	\$0	\$5,260,879	\$13,093,446
Auto/Cycle Dealers	\$20,731,903	\$0	\$0	\$10,365,951	\$0	\$4,146,380	\$3,109,786	\$1,036,595	\$2,073,190
Camp/Resort/Lodging	\$140,306	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$140,306
Restaurant/Seafood Market	\$21,506,350	\$0	\$0	\$21,506,350	\$0	\$0	\$0	\$0	\$0
Miscellaneous Retail/Other	\$19,316,164	\$0	\$0	\$18,147,336	\$0	\$337,366	\$524,172	\$0	\$307,292
Charter Boats/Rentals	\$53,189,146	\$0	\$0	\$2,922,480	\$1,587,456	\$0	\$0	\$0	\$48,679,184
Port Tenants	\$341,005,698	\$0	\$312,878,189	\$0	\$0	\$0	\$0	\$0	\$28,127,515
<b>Total</b>	<b>\$2,986,153,162</b>	<b>\$75,246,707</b>	<b>\$320,498,136</b>	<b>\$708,125,964</b>	<b>\$282,985,764</b>	<b>\$386,327,753</b>	<b>\$546,668,072</b>	<b>\$12,460,056</b>	<b>\$653,840,675</b>

sale will immediately leave the local economy. The money remaining after the retailer pays the manufacturer is the retail margin, which is used to pay for items such as wages, rent, utilities, business services, and retained profits. Only the retail margin, 15 to 18 percent of the purchase price in the case of boat dealers, will result in economic stimulus to the local economy. All retail and wholesale trade activity must be margined in this manner to accurately estimate the benefit to the county's economy.

### **Economic Benefits Generated by Marine-Related Businesses**

The 2009 updated estimates of direct marine-related business activity in the county were used in conjunction with the IMPLAN regional economic impact model to estimate the total (direct, indirect, and induced) benefits of the District's Waterways in Broward County. The benefits were measured as changes in business volume, personal income, employment, and tax revenues. As illustrated in Table M-6, sales to consumers (by marine-related businesses in Broward County) generate a total of \$4.337 billion in business volume (sales), \$962.4 million in personal income (wages), and 20,825 jobs. State and local tax revenues were estimated at \$172.6 million. Tax revenues were not presented in Table M-6, by business activity, because tax revenues generated by many of the individual business activities are fairly small, especially those generated by indirect and induced impacts, and as a result of rounding to two decimal places in the table, would have been displayed as zeros.

The \$4.337 billion in total business volume generated by marine-related businesses is distributed as a direct benefit of \$3.110 billion, an indirect benefit of \$618.8 million, and an induced benefit of \$607.6 million. The \$962.4 million in personal income includes a direct benefit of \$542.3 million and indirect and induced benefits of \$420.1 million. The 20,825 man-years of employment generated by marine-related businesses include 11,412 direct jobs, 4,633 indirect jobs, and 4,781 induced jobs. The \$172.6 million in state and local tax revenues includes \$100.2 million generated by direct benefits, \$30.8 million generated by indirect benefits, \$41.6 million generated by induced benefits.

About one-quarter of the total economic benefits are generated by the retail trade sector, including \$1.249 billion in business sales, \$206.7 million in personal income, and 5,731 jobs. The second largest benefits are generated by the service industry, with \$1.097 billion in sales, \$321.9 million in personal income, and 7,149 jobs.



**Table M-6. Summary of Economic Benefits of  
Marine-Related Businesses in Broward County,  
Under Current Existing Conditions**

Business Activity	Business Volume (Sales) (Millions of Dollars)				Personal Income (Wages) (Millions of Dollars)				Employment (Jobs)			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Construction	78.02	26.28	31.19	135.50	29.24	10.24	9.91	49.39	551	191	246	987
Manufacturing	396.90	139.82	113.39	650.11	97.04	46.43	36.02	179.48	1,505	860	893	3,258
Transportation	331.40	119.98	78.63	530.01	48.31	51.19	24.98	124.48	600	1,000	619	2,218
Wholesale Trade	574.55	31.78	45.54	651.87	45.84	11.84	14.47	72.15	737	235	358	1,330
Retail Trade	1,041.66	77.33	130.43	1,249.42	138.83	26.42	41.46	206.71	4,134	572	1,026	5,731
Finance	12.84	4.39	5.21	22.45	5.05	1.56	1.66	8.26	79	30	41	150
Services	674.99	219.24	203.19	1,097.42	177.94	79.36	64.57	321.86	3,806	1,745	1,599	7,149
<b>Total</b>	<b>3,110.37</b>	<b>618.83</b>	<b>607.58</b>	<b>4,336.77</b>	<b>542.25</b>	<b>227.02</b>	<b>193.07</b>	<b>962.35</b>	<b>11,412</b>	<b>4,633</b>	<b>4,781</b>	<b>20,825</b>

**Purchases of Non-Marine-Related Items**

The direct economic benefits generated by marine-related businesses, as estimated above, do not take into account purchases by recreational boaters and fishermen who purchase non-marine-related items for consumption while using the Waterways. These impacts primarily include the purchase of gas for boats and vehicles and the purchase of food, drinks, and ice consumed during boating and fishing trips.

To estimate the economic benefits of non-marine-related items purchased from businesses not located on the Waterways, a randomly generated sample of 2,880 registered boat owners within the District, including 240 boat owners residing in Broward County, was drawn from the Florida Department of Highway Safety and Motor Vehicles boat owner registration database and sent a questionnaire to determine their boating related spending and use patterns. A total of 784 completed questionnaires were returned by boaters residing within the District's boundaries, of which 31 indicated that they no longer own a boat, 122 indicated that they did not use their boat at all, or did not use their boat on the District's Waterways in the past 12 months, and 11 did not respond to certain questions, resulting in a total of 620 questionnaires with usable data. Broward County boat owners returned a total of 41 completed questionnaires, of which four indicated that they no longer own a boat, seven indicated that they did not use their boat at all, or did not use their boat on the District's Waterways in the past 12 months, and two did not respond to certain questions, resulting in a total of 28 questionnaires with usable data.

Results from the usable surveys were entered into a database and queried by boat size to determine frequency of use in Broward County and spending patterns for such items as gas,

food, drinks, ice, bait, hoist/launch, and other items. Respondents were also asked to differentiate the location of the purchase of these items as being either from establishments located on the Waterways or from establishments not located on the Waterways. This was intended to prevent double counting, because purchases made on the Waterways would have been included in the estimated marine-related business benefits presented in the previous section. To ensure adequate response in each boat size classification, the responses from Palm Beach, Broward, and Miami-Dade counties were combined when estimating the average number of trips on the Waterways that each boater takes per year and the average expenditures per trip for each boat size class.

These expenditures per trip, which were distributed by boat size, were applied to the number of registered pleasure boats in each boat size class in Broward County. The number of trips taken per year, by boat size, as obtained from the survey of boat owners, was applied to the total expenditures per trip for each boat size class. The total expenditures for each boat size class were then summed to estimate the total expenditures for the county. The total expenditures on non-marine-related items at establishments not located on the Waterways include \$23.8 million for gasoline and \$16.1 million for food, drinks, and ice.

The regional impact model used in this analysis to estimate the total economic benefits margined the retail sales of gasoline, food, drinks, and ice to estimate the portion of sales that would be produced and distributed by companies located in Broward County. This was accomplished by distributing the food, drinks, and ice expenditures to various commodities that would tend to be consumed on a boating or fishing trip.

### **Economic Benefits Generated by Purchases of Non-Marine-Related Items**

The \$39.9 million in retail purchases (\$23.8 million for gasoline sales and \$16.1 million for food, drinks, and ice) by recreational boaters from establishments not located on the Waterways were estimated to generate total economic benefits of \$54.6 million in business volume, \$12.7 million in personal income, 286 jobs, and \$731 million in tax revenues. As illustrated in Table M-7, the sales generated by these purchases include \$39.6 million in direct benefits and \$15.0 million in indirect and induced benefits. The total personal income includes \$7.6 million in direct benefits and \$5.0 million in indirect and induced benefits. The 286 jobs include 173 direct jobs, 50 indirect jobs, and 63 induced jobs. State and local tax revenues

include \$5.9 million generated by direct activities, \$0.5 million generated by indirect activities, and \$0.9 million generated by induced activities. The \$5.9 million in tax revenues generated by direct activities includes \$3.0 million in fuel taxes generated by the sale of \$23.8 million in gasoline. The fuel tax revenues were estimated outside of the IMPLAN model and were based on the amount of gasoline sold, assuming an average price of \$2.70 per gallon, and the prevailing fuel tax per gallon. The Broward County fuel tax in 2010 was \$0.346 per gallon, including \$0.16 per gallon in state levied taxes and \$0.186 per gallon in locally levied taxes. The state levied taxes include \$0.12 per gallon in retail sales tax. To avoid double counting of gasoline retail sales taxes that are included in the fuel tax, the sales taxes generated by direct activities estimated in the IMPLAN model were not incorporated into the tax revenue estimate.

**Table M-7. Summary of Economic Benefits of Non-Marine-Related Items Purchased by Boaters in Broward County, Under Current Existing Conditions**

Activity	Economic Impacts			
	Direct	Indirect	Induced	Total
Business Volume (Millions)	\$39.64	\$6.98	\$8.00	<b>\$54.63</b>
Personal Income (Millions)	\$7.63	\$2.50	\$2.54	<b>\$12.68</b>
Employment	173	50	63	<b>286</b>
Tax Revenues (Millions)	\$5.93	\$0.52	\$0.86	<b>\$7.31</b>

### Combined Economic Benefits

The total economic benefits of the Waterways include the benefits generated by marine-related businesses in Broward County (presented in Table M-6) and the purchase of non-marine-related items for consumption on the Waterways (presented in Table M-7). A summary of these benefits is presented in Table M-8. Total benefits consist of \$4.391 billion in business volume, \$975.0 million in personal income, 21,111 jobs, and \$178.3 million in tax revenue. Total business volume benefits consist of \$3.150 billion in direct sales and \$1.241 billion in indirect and induced sales. Total personal income benefits consist of \$549.9 million in direct wages and \$425.1 million in indirect and induced wages. Total employment benefits consist of 11,584 direct jobs and 9,527 indirect and induced jobs. State and local tax revenues include \$105.1 million generated by direct activities, \$31.1 million generated by indirect activities, and

\$42.1 million generated by induced activities. The \$105.1 million generated by direct activity includes \$3.0 million in fuel taxes generated by gasoline sales.

**Table M-8. Summary of Total Economic Benefits of the Waterways in Broward County, Under Current Existing Conditions**

Activity	Total Economic Impacts			
	Direct	Indirect	Induced	Total
Business Volume (Millions)	\$3,150.01	\$625.81	\$615.58	<b>\$4,391.40</b>
Personal Income (Millions)	\$549.88	\$229.52	\$195.61	<b>\$975.02</b>
Employment	11,584	4,683	4,844	<b>21,111</b>
Tax Revenues (Millions)	\$105.07	\$31.14	\$42.10	<b>\$178.31</b>

These benefits represent about a 28 percent decrease from the values presented in the original analysis in business volume, a 29 percent decrease in personal income, and a 34 percent decrease in employment. The decrease is mainly due to the overall decrease in economic activity resulting from the 2007-2009 U.S. economic recession. The overall marine-related economy, or the direct benefit, was estimated to have decreased by 30 percent, based on FDOR tax data.

As can be seen, when the current benefits are compared to the benefits from the original analysis, the percent decreases in personal income and employment benefits are greater than the percent decrease in business volume benefits. This is due to several factors, namely inflation and updates to the IMPLAN model software. Business volume and personal income benefits are presented in current values. The values in the original analysis are presented in 2007 dollars and the values in the current analysis are presented in 2010 dollars. The influence of inflation between the two periods was not included. The inflation rate, as measured by the Consumer Price Index (CPI) for all wage earners, from 2007 to 2010 was 5.2 percent. In other words, all other factors being held constant, the reported business output would have had to increase by approximately 5.2 percent, from 2007 to 2010, in order to maintain the same personal income and employment levels as reported in 2007. In addition, the total compensation costs for all civilian employees increased 6.1 percent over the same time period. In other words, employee compensation increased at a faster rate than inflation to the point that, in 2010, employees were paid approximately 6.1 percent more than they were paid in 2007. Therefore, business output and personal income would have to increase by 6.1 percent just to maintain the 2007 employment level. Another reason for the disparity between changes in business volume and

employment is the change in output per person. For instance, from 2007 to 2010, output per person in the manufacturing industry experienced an 8.2 percent increase. This increase includes the 6.1 percent increase in employee compensation, indicating that adjusted for increasing employee compensation, output per employee increased by about 2.1 percent from 2007 to 2010. In other words, in the amount of time it took an employee to produce a \$1.00 of output in 2007, approximately \$1.082 of output could be produced in 2010, with increased employee compensation accounting for about \$0.061 of that increased output.

The IMPLAN model is periodically updated to increase the accuracy of estimating economic benefits associated with indirect and induced activities. Each update results in slight changes to how the direct impacts are distributed to industry sectors in the model and how the indirect and induced benefits are estimated. Since the conduct of many of the original analyses, the IMPLAN model has been updated several times; therefore, the impact of each update cannot be traced through the results of each analysis. In general, the latest update had the greatest impact on the method of calculating benefits. One update to the model included adjusting the number of sectors evaluated in the model. Previous versions of IMPLAN included 509 sectors or industries to which direct impacts could be assigned. The updated version of the software includes 440 sectors or industries. As a result, several industry sectors in the older version were combined, or industries were divided between two or more of the sectors in the updated version. Consequently, the direct impacts in the current analysis had to be assigned to the new sectors. In most instances, the assignments were straightforward because the industry or sector did not change between the two versions. However, for some direct impacts, the assignment to industries in the updated version of IMPLAN required the direct impacts to be assigned to sectors that differed, by varying degrees, to the sectors used in the older versions of IMPLAN. As a result, the indirect and induced benefits, as calculated by the new version of IMPLAN, could differ from the benefits developed using the old version of the model.

In addition, the economic multipliers used to generate total economic benefits have been decreasing over time, due in part to increased imports. The total economic benefit of an action is a function of the direct benefit and the total effect multiplier. Due to an increase in the importation of goods and services into the U.S., the multiplier effect may have decreased since the conduct of the original analyses. When domestic income rises, consumers typically purchase more goods and services, some of which are imports. The purchase of imports lowers the

demand for U.S. goods and services and allows money to “leak out” of the economy, resulting in fewer “rounds” of spending and thereby less indirect and induced benefits.

For instance, in Duval County, the output multiplier for the IMPLAN Sector “Boat Building” decreased from 1.88 in 2001 to 1.52 in 2008, a decrease of 19 percent, due to changes in the structure of the economy. This decrease is primarily due to the change in imports over this time period. On the other hand, in Broward County, for which the original analysis was conducted more recently, the change in the output multiplier for the Boat Building sector increased from 1.65 in 2006 to 1.7 in 2008, an increase of three percent.

### **Economic Benefits Assuming a Cessation of Maintenance**

If maintenance of the Waterways in Broward County was to cease, it is believed that shoaling would eventually result in an effective vessel draft limitation of three feet. This, in turn, would result in a reduction of marine-related business generated by vessels drafting in excess of three feet.

### **Expected Marine-Related Business Volume**

The original analysis estimated total marine-related business volume assuming three-foot draft restrictions (as calculated from the survey-adjusted database of marine-related businesses) at \$2.17 billion. For this analysis, total business volume assuming three-foot draft restrictions was updated to current values by applying the percent of business sales, by business type, that are expected to be retained under the three-foot draft scenario (as obtained from the original analysis) to the 2009 updated current total business volume as presented in Table M-3. The resulting updated total business volume, by business type, was distributed to individual business activities using the distribution established in the original analysis.

Table M-9 presents the total 2009 marine-related business volume for each business type, the percent of existing business that would be retained if vessel drafts were limited to three feet MLW on the Waterways (as presented in the original analysis), and the resulting total business volume that would be retained with three feet of vessel draft, distributed by business activity.

**Table M-9. Total Marine-Related Business Revenue by Business Type, Distributed by Business Activity, Assuming Three-Foot Vessel Draft Restrictions on the Waterways**

Business Type	Total Existing		Percent of Business to Remain	Total Marine		Construction Volume	Transportation Volume	Retail Trade Volume	Used Boat Sales Volume	Manufacturing Volume	Wholesale Trade Volume	Finance Volume	Service Volume
	Marine Business Volume	Business Volume		Business to Remain	With 3' Drafts								
Boat Dealers	\$291,473,457	\$87,777,076	30.11%	\$0	\$0	\$59,158,177	\$8,903,845	\$0	\$0	\$0	\$1,406,100	\$611,946	\$17,697,021
Yacht Brokers	\$294,184,883	\$66,312,911	22.54%	\$0	\$17,967	\$2,221,325	\$51,915,095	\$0	\$0	\$395,654	\$0	\$66,120	\$11,696,728
Marinas	\$99,658,889	\$23,092,804	23.17%	\$0	\$0	\$10,605,194	\$682,795	\$0	\$0	\$0	\$0	\$213,491	\$11,591,327
Boat Yards	\$45,409,524	\$1,465,551	3.23%	\$0	\$0	\$189,989	\$30,033	\$0	\$0	\$237,781	\$39,930	\$0	\$967,818
Canvas Products/Upholstery	\$37,477,895	\$23,059,393	61.53%	\$237,359	\$0	\$2,561,555	\$0	\$16,583,479	\$466,979	\$0	\$0	\$0	\$3,210,016
Boat Repairs	\$66,776,381	\$27,680,782	41.45%	\$0	\$0	\$6,634,990	\$878,965	\$1,498,391	\$5,494,072	\$0	\$0	\$0	\$13,174,382
Outboard Repairs	\$109,031,922	\$27,756,543	25.46%	\$0	\$1,303	\$2,610,591	\$124,485	\$641,445	\$13,420,445	\$0	\$0	\$0	\$10,958,256
Marine Equipment/Electronics	\$233,853,076	\$117,954,425	50.44%	\$0	\$309,718	\$80,053,876	\$0	\$4,601,655	\$5,599,640	\$0	\$0	\$0	\$27,389,516
Marine Construction	\$80,207,708	\$23,267,025	29.01%	\$22,152,318	\$0	\$0	\$0	\$155,027	\$0	\$0	\$0	\$0	\$959,684
Auto Parts	\$2,189,324	\$1,891,352	86.39%	\$0	\$0	\$1,642,183	\$0	\$62,292	\$124,586	\$0	\$0	\$0	\$62,292
Tackle/Dive Equipment	\$27,869,892	\$16,294,602	58.47%	\$0	\$1,210,582	\$8,083,224	\$0	\$95,247	\$60,621	\$0	\$0	\$0	\$6,844,928
Marine/Sporting Goods Retail	\$117,294,290	\$51,679,211	44.06%	\$34,357	\$85,939	\$49,218,714	\$103,076	\$34,357	\$2,172,666	\$0	\$0	\$0	\$30,096
Wholesaler	\$488,761,163	\$397,001,549	81.23%	\$0	\$1,331,471	\$5,348,820	\$1,198,421	\$4,508,523	\$347,137,190	\$0	\$0	\$0	\$38,675,544
Boat Manufacturer	\$174,164,870	\$47,204,534	27.10%	\$0	\$1,378,068	\$1,378,068	\$0	\$44,628,044	\$0	\$0	\$0	\$0	\$0
Equipment Manufacturer	\$164,647,528	\$85,240,497	51.77%	\$5,071	\$1,691	\$874,042	\$0	\$80,295,589	\$3,413,373	\$0	\$0	\$0	\$650,729
Ski/Boating Instruction	\$5,061,072	\$926,209	18.30%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$926,210
Boat Trailers	\$2,069,475	\$2,069,475	100.00%	\$0	\$0	\$2,069,475	\$0	\$0	\$0	\$0	\$0	\$0	\$0
A/C Heating	\$31,418,806	\$7,929,281	25.24%	\$6,319	\$0	\$1,871,599	\$0	\$2,145,794	\$0	\$0	\$0	\$0	\$3,905,575
Signs	\$2,049,588	\$1,371,875	66.93%	\$0	\$0	\$144,165	\$0	\$33,213	\$1,019,989	\$0	\$0	\$0	\$174,509
Water Transportation	\$59,034,669	\$50,711,006	85.90%	\$0	\$1,795,739	\$0	\$0	\$1,795,739	\$0	\$0	\$0	\$0	\$47,119,524
Clubs/Associations	\$5,849,705	\$4,424,846	75.64%	\$0	\$0	\$1,471,501	\$116,833	\$116,833	\$0	\$0	\$0	\$0	\$2,719,685
Engineering/Surveyors	\$21,514,271	\$9,724,797	45.20%	\$0	\$0	\$0	\$0	\$116,813	\$0	\$0	\$0	\$0	\$9,607,987
Consultants	\$10,184,834	\$5,092,417	50.00%	\$0	\$0	\$0	\$0	\$701,600	\$0	\$0	\$0	\$0	\$4,390,817
Legal Services	\$1,230,589	\$1,176,751	95.63%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,176,751
Insurance	\$24,154,685	\$8,662,585	35.86%	\$0	\$0	\$326,370	\$0	\$483,584	\$0	\$0	\$0	\$0	\$8,662,586
Interior Design	\$5,939,115	\$890,536	14.99%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$80,583
Business/Personal Services	\$46,217,536	\$27,207,552	58.87%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,222,368	\$24,985,178
Storage	\$1,052,163	\$1,052,163	100.00%	\$0	\$0	\$52,608	\$0	\$0	\$0	\$0	\$0	\$0	\$999,555
Boating Services	\$81,486,284	\$12,387,215	15.20%	\$0	\$11,284	\$3,625,408	\$0	\$1,138,120	\$0	\$1,138,120	\$0	\$625,771	\$6,986,621
Auto/Cycle Dealers	\$20,731,903	\$20,731,903	100.00%	\$0	\$0	\$10,365,951	\$0	\$4,146,380	\$3,109,786	\$0	\$0	\$1,036,595	\$2,073,190
Camp/Resort/Lodging	\$140,306	\$140,306	100.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$140,306
Restaurant/Seafood Market	\$21,506,350	\$21,506,350	100.00%	\$0	\$0	\$21,506,350	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Miscellaneous Retail/Other	\$19,316,164	\$18,085,401	93.63%	\$0	\$0	\$16,983,356	\$0	\$319,651	\$493,942	\$0	\$0	\$0	\$288,454
Charter Boats/Rentals	\$53,189,146	\$32,696,962	61.47%	\$0	\$0	\$1,906,948	\$906,194	\$0	\$0	\$0	\$0	\$0	\$29,883,826
Port Tenants	\$341,005,698	\$341,005,698	100.00%	\$0	\$312,878,189	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$28,127,515
<b>Total</b>	<b>\$2,986,153,162</b>	<b>\$1,565,471,581</b>	<b>51.17%</b>	<b>\$22,435,423</b>	<b>\$317,643,883</b>	<b>\$290,904,478</b>	<b>\$64,859,742</b>	<b>\$164,735,210</b>	<b>\$383,959,318</b>	<b>\$4,776,291</b>	<b>\$316,157,211</b>		

As can be seen from Table M-9, 51 percent of all business activity would be retained by marine-related businesses if vessel drafts were limited to three feet MLW. Total marine-related business revenue is expected to be \$1.57 billion if vessel drafts were reduced to three feet MLW, a reduction of \$1.42 billion from the \$2.99 billion in current business activity.

**Economic Benefits Generated by Marine-Related Businesses**

Assuming vessel draft restrictions of three feet MLW on the Waterways, the \$1.565 billion of marine-related business revenue in Broward County would be expected to generate total benefits of \$2.287 billion in business volume (sales), \$498.7 million in personal income (wages), and 10,312 jobs (Table M-10). State and local tax revenues are estimated at \$90.3 million. The \$2.287 billion in business volume expected to be generated by marine-related business includes a total direct benefit of \$1.630 billion and combined indirect and induced benefits of \$657.4 million. The \$498.7 million in personal income includes a direct benefit of \$267.6 million and combined indirect and induced benefits of \$231.2 million. The 10,312 jobs generated by marine-related businesses include 5,186 direct jobs, 2,648 indirect jobs, and 2,478 induced jobs. State and local tax revenues are estimated to be distributed as \$51.5 million generated by direct activities, \$17.3 million generated by indirect activities, and \$21.5 million generated by induced activities.

**Table M-10. Summary of Economic Benefits of Marine-Related Businesses in Broward County, Assuming Vessel Draft Restrictions of Three Feet**

Business Activity	Business Volume (Sales) (Millions of Dollars)				Personal Income (Wages) (Millions of Dollars)				Employment (Jobs)			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Construction	23.26	7.84	9.30	40.40	8.72	3.05	2.95	14.73	164	57	73	294
Manufacturing	169.17	53.96	50.79	273.91	46.22	18.02	16.13	80.37	626	335	400	1,361
Transportation	328.45	118.83	77.88	525.17	47.82	50.73	24.74	123.30	588	991	613	2,192
Wholesale Trade	403.54	22.64	30.61	456.79	30.26	8.51	9.73	48.49	458	167	241	866
Retail Trade	373.91	30.92	49.24	454.07	51.82	10.56	15.65	78.03	1,690	229	387	2,306
Finance	4.92	1.68	2.00	8.60	1.93	0.60	0.63	3.17	30	12	16	58
Services	326.57	106.60	95.10	528.27	80.79	39.63	30.22	150.63	1,629	857	748	3,235
<b>Total</b>	<b>1,629.83</b>	<b>342.47</b>	<b>314.91</b>	<b>2,287.21</b>	<b>267.55</b>	<b>131.11</b>	<b>100.06</b>	<b>498.73</b>	<b>5,186</b>	<b>2,648</b>	<b>2,478</b>	<b>10,312</b>

Comparing current economic benefits to economic benefits expected to occur if vessel drafts were restricted to three feet MLW indicates that the county would realize a total decrease



in business volume of nearly \$2.050 billion, a decrease in personal income of \$463.6 million, a decrease of 10,513 jobs, and a decrease of \$82.2 million in tax revenues.

### **Expected Purchases of Non-Marine-Related Items**

Vessel draft restrictions of three feet MLW will impact the sale of non-marine-related items to recreational boaters and fishermen. The extent of this impact was estimated based on the survey of registered boat owners in Broward County and the distribution of registered vessels by size. The current sales of non-marine-related items to recreational boaters were estimated at \$38.9 million (\$23.8 million for gasoline sales and \$16.1 million for food, drink, and ice). Vessel draft restrictions of three feet will prevent larger vessels from utilizing the Waterways. As a result, retail sales of non-marine-related items from businesses not located on the Waterways are expected to drop to \$22.7 million (including \$14.2 million for gasoline sales and \$8.5 million in food, drink, and ice sales), a reduction of \$17.2 million from existing conditions.

### **Economic Benefits Generated by Purchases of Non-Marine-Related Items**

As illustrated in Table M-11, the expected \$22.7 million in retail sales of gas, food, drinks, and ice to recreational boaters from businesses not located on the Waterways would generate benefits of \$31.2 million in business volume, \$7.3 million in personal income, 164 jobs, and \$3.4 million in tax revenues. Compared to existing conditions, this is a reduction of about \$23.4 million in business volume, \$5.4 million in personal income, 122 jobs, and \$2.4 million in tax revenues. Tax revenues generated under this scenario include \$1.8 million in fuel taxes distributed as \$0.84 million in state levied taxes and \$0.98 million in locally levied taxes.

**Table M-11. Summary of Economic Benefits of Non-Marine-Related Items Purchased by Boaters in Broward County, Assuming Vessel Draft Restrictions of Three Feet**

Activity	Economic Impacts			
	Direct	Indirect	Induced	Total
Business Volume (Millions)	\$22.57	\$4.04	\$4.62	<b>\$31.23</b>
Personal Income (Millions)	\$4.41	\$1.45	\$1.47	<b>\$7.32</b>
Employment	99	29	36	<b>164</b>
Tax Revenues (Millions)	\$2.87	\$0.19	\$0.32	<b>\$3.38</b>

### Combined Economic Benefits

The total combined economic benefits expected to be generated with three-foot vessel draft restrictions on the Waterways by marine-related businesses and from the purchases of non-marine-related items from businesses not located on the Waterways are presented in Table M-12. The combined benefits include \$2.318 billion in business volume, \$506.1 million in personal income, 10,476 jobs, and \$93.7 million in tax revenues. The \$93.7 million in state and local tax revenues includes \$1.8 million in fuel taxes generated by gasoline sales to boaters. These benefits are a reduction of over \$2.073 billion in business volume, \$469.0 million in personal income, 10,635 jobs, and \$84.6 million in tax revenues compared to existing conditions on the Waterways and account for 47 to 50 percent of the existing benefits of the Waterways.

**Table M-12. Summary of Total Economic Benefits of the Waterways in Broward County, Assuming Vessel Draft Restrictions of Three Feet**

Activity	Total Economic Impacts			
	Direct	Indirect	Induced	Total
Business Volume (Millions)	\$1,652.39	\$346.51	\$319.54	<b>\$2,318.44</b>
Personal Income (Millions)	\$271.96	\$132.56	\$101.53	<b>\$506.05</b>
Employment	5,284	2,677	2,515	<b>10,476</b>
Tax Revenues (Millions)	\$54.33	\$17.53	\$21.86	<b>\$93.71</b>

### Economic Benefits Assuming a Higher State of Maintenance

The full implementation of the District’s Dredge Material Management Plan would result in a higher state of maintenance of the Waterways and an increase in vessel draft restrictions in Broward County to 10 feet MLW. This increase in draft allowance would permit deeper draft vessels to fully utilize the Waterways in Broward County. This, in turn, would increase the business volume of marine-related businesses in the county. The sale of non-marine-related items by businesses not located on the Waterways would not experience a significant impact under this maintenance scenario because deepening the Waterways would result in increased use by deeper draft vessels (drafting between 6.5 to 10 feet) that are typically stored in the water and tend not to be trailered. Owners of those vessels typically do not purchase many items from businesses not located on the Waterways, but rather purchase almost all of their supplies from businesses with waterway access.

### **Expected Marine-Related Business Volume**

The original analysis estimated total marine-related business volume assuming 10-foot draft restrictions (as calculated from the survey-adjusted database of marine-related businesses) at \$4.84 billion. Total business volume assuming 10-foot draft restrictions was updated to current values by applying the expected percent increase in business sales, by business type, under the 10-foot draft scenario (as obtained from the original analysis) to the updated current total business volume as presented in Table M-3. The resulting updated total business volume, by business type, was distributed to individual business activities using the distribution established in the original analysis.

Table M-13 presents the total 2009 marine-related business volume for each business type, the expected percent increase in existing business that would result if vessel drafts were increased to 10 feet MLW on the Waterways (as presented in the original analysis), the resulting total business volume assuming 10-foot vessel drafts, and the business volume assuming 10-foot vessel drafts distributed by business activity.

As can be seen from the table, business activity would be expected to increase by 14 percent if vessel drafts were increased to 10 feet MLW. Total marine-related business revenue is expected to be \$3.396 billion, an increase of \$410.0 million from the \$2.986 billion in existing business activity.

**Table M-13. Total Marine-Related Business Revenue by Business Type, Distributed by Business Activity, Assuming 10-Foot Vessel Draft Restrictions on the Waterways**

Business Type	Total Existing Marine Business Volume		Percent Increase in Business	Total Marine Business Volume With 10' Drafts		Construction Volume	Transportation Volume	Retail Trade Volume	Used Boat Sales Volume	Manufacturing Trade Volume	Wholesale Trade Volume	Finance Volume	Service Volume
	Volume	Volume		Volume	Volume								
Boat Dealers	\$291,473,457	\$344,827,425	18.30%	\$0	\$0	\$227,392,043	\$33,969,178	\$0	\$0	\$0	\$5,452,137	\$1,467,647	\$76,546,415
Yacht Brokers	\$294,184,883	\$362,650,537	23.27%	\$0	\$0	\$19,706,906	\$290,299,059	\$3,197,545	\$0	\$0	\$0	\$610,703	\$48,680,575
Mainas	\$99,658,889	\$123,348,729	23.77%	\$0	\$0	\$25,670,382	\$1,736,218	\$0	\$0	\$0	\$0	\$521,913	\$95,420,210
Boat Yards	\$45,409,524	\$78,614,393	73.12%	\$0	\$0	\$18,934,307	\$3,054,641	\$27,409,293	\$4,637,063	\$0	\$0	\$0	\$24,579,089
Canvas Products/Upholstery	\$37,477,895	\$42,444,346	13.25%	\$438,130	\$0	\$4,627,983	\$0	\$29,338,165	\$798,643	\$0	\$0	\$0	\$7,241,425
Boat Repairs	\$66,776,381	\$72,792,313	9.01%	\$0	\$0	\$17,874,175	\$2,473,904	\$3,813,657	\$13,983,414	\$0	\$0	\$0	\$34,647,148
Outboard Repairs	\$109,031,922	\$140,452,354	28.82%	\$0	\$3,589	\$10,756,651	\$673,376	\$3,102,579	\$76,115,610	\$0	\$0	\$0	\$49,800,547
Marine Equipment/Electronics	\$233,853,076	\$270,216,073	15.55%	\$0	\$748,763	\$185,883,743	\$0	\$9,785,242	\$12,592,808	\$0	\$0	\$0	\$61,205,459
Marine Construction	\$80,207,708	\$104,774,350	30.63%	\$97,054,156	\$0	\$0	\$0	\$464,771	\$0	\$0	\$0	\$0	\$7,255,412
Auto Parts	\$2,189,324	\$2,338,310	6.81%	\$0	\$0	\$2,043,214	\$0	\$73,772	\$147,546	\$0	\$0	\$0	\$73,772
Tackle/Dive Equipment	\$27,869,892	\$28,234,787	1.31%	\$0	\$2,351,462	\$13,431,517	\$0	\$132,502	\$86,695	\$0	\$0	\$0	\$12,232,591
Marine/Sporting Goods Retail	\$117,294,290	\$135,466,087	15.49%	\$89,700	\$261,561	\$127,578,047	\$269,102	\$89,700	\$7,075,966	\$0	\$0	\$0	\$102,016
Wholesaler	\$488,761,163	\$511,864,617	4.73%	\$0	\$2,059,441	\$7,425,501	\$0	\$6,178,326	\$448,363,223	\$0	\$0	\$0	\$47,838,121
Boat Manufacturer	\$174,164,870	\$182,776,398	4.94%	\$0	\$0	\$10,633,101	\$10,364,128	\$161,779,169	\$0	\$0	\$0	\$0	\$0
Equipment Manufacturer	\$164,647,528	\$181,009,769	9.94%	\$6,143	\$2,041	\$6,090,474	\$0	\$153,314,852	\$19,751,084	\$0	\$0	\$0	\$1,845,152
Ski/Boating Instruction	\$5,061,072	\$5,061,072	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,061,071
Boat Trailers	\$2,049,475	\$2,069,475	0.99%	\$0	\$0	\$2,069,475	\$0	\$0	\$0	\$0	\$0	\$0	\$0
A/C Heating	\$31,418,806	\$36,116,711	14.95%	\$22,599	\$0	\$9,035,200	\$0	\$8,966,652	\$0	\$0	\$0	\$0	\$18,092,253
Signs	\$59,034,669	\$2,109,963	2.95%	\$0	\$0	\$316,012	\$0	\$69,132	\$1,412,021	\$0	\$0	\$0	\$312,800
Water Transportation	\$5,849,705	\$75,320,095	27.59%	\$0	\$0	\$2,033,265	\$161,437	\$2,881,398	\$0	\$0	\$0	\$0	\$69,557,311
Clubs/Associations	\$21,514,271	\$6,562,135	12.18%	\$0	\$0	\$0	\$0	\$161,437	\$0	\$0	\$0	\$0	\$4,206,006
Engineering/Surveyors	\$10,184,834	\$25,386,406	18.00%	\$0	\$0	\$0	\$0	\$249,735	\$0	\$0	\$0	\$0	\$25,136,669
Consultants	\$1,230,589	\$15,107,672	48.33%	\$0	\$0	\$0	\$0	\$2,070,206	\$0	\$0	\$0	\$0	\$13,037,464
Legal Services	\$24,154,685	\$12,300,589	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,230,589
Insurance	\$5,939,115	\$8,592,309	9.73%	\$0	\$0	\$3,443,731	\$0	\$4,649,735	\$0	\$0	\$0	\$0	\$26,505,096
Interior Design	\$46,217,536	\$51,903,045	12.30%	\$0	\$0	\$52,608	\$0	\$0	\$0	\$0	\$0	\$0	\$498,843
Business/Personal Services	\$1,052,163	\$1,052,163	0.00%	\$0	\$0	\$52,608	\$0	\$0	\$0	\$0	\$0	\$0	\$999,555
Storage	\$81,486,284	\$97,255,922	19.35%	\$0	\$56,387	\$72,180,565	\$0	\$3,420,189	\$0	\$0	\$0	\$6,635,088	\$14,963,698
Boating Services	\$20,731,903	\$20,731,903	0.00%	\$0	\$0	\$10,365,951	\$0	\$4,146,380	\$3,109,786	\$0	\$0	\$1,036,595	\$2,073,190
Auto/Cycle Dealers	\$140,306	\$140,306	0.00%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$140,306
Camp/Resort/Lodging	\$21,506,350	\$21,506,350	0.00%	\$0	\$0	\$21,506,350	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Restaurant/Seafood Market	\$19,316,164	\$20,105,407	4.09%	\$0	\$0	\$18,875,570	\$0	\$360,588	\$550,531	\$0	\$0	\$0	\$318,723
Miscellaneous Retail/Other	\$53,189,146	\$55,185,760	3.75%	\$0	\$0	\$3,023,526	\$1,674,739	\$0	\$0	\$0	\$0	\$0	\$50,487,449
Charter Boats/Rentals	\$341,005,698	\$342,296,380	0.38%	\$0	\$313,836,530	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$28,459,859
Port Tenants	\$2,986,153,162	\$3,396,049,246	14.08%	\$97,610,729	\$322,356,979	\$820,950,297	\$344,675,782	\$425,655,026	\$594,076,526	\$14,686,396	\$0	\$0	\$776,037,409

### Economic Benefits Generated by Marine-Related Business

If maintenance of the Waterways was increased to reflect the full implementation of the District's Dredge Material Management Plan, resulting in increased vessel drafts to 10 feet MLW, marine-related businesses in the county would be expected to generate a total of \$4.932 billion in business volume, \$1.101 billion in personal income, and 23,919 jobs (Table M-14). State and local tax revenues were estimated at \$197.1 million. The sales expected to be generated by marine-related businesses under this scenario include a direct benefit of \$3.538 billion and combined indirect and induced benefits of over \$1.394 billion. The total personal income generated under this maintenance scenario includes a direct benefit of \$624.4 million and combined indirect and induced benefits of \$476.5 million. Total employment benefits include 13,222 direct jobs, 5,228 indirect jobs, and 5,469 induced jobs. The \$197.1 million in state and local tax revenues includes \$114.9 million generated by direct benefits, \$34.7 million generated by indirect benefits, and \$47.5 million generated by induced benefits.

**Table M-14. Summary of Economic Benefits of Marine-Related Businesses in Broward County, Assuming Vessel Draft Restrictions of 10 Feet**

Business Activity	Business Volume (Sales) (Millions of Dollars)				Personal Income (Wages) (Millions of Dollars)				Employment (Jobs)			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Construction	101.21	34.09	40.47	175.77	37.93	13.29	12.86	64.07	714	248	319	1,281
Manufacturing	437.32	154.48	124.70	716.49	106.47	51.30	39.61	197.38	1,661	950	982	3,593
Transportation	333.32	120.68	78.41	532.41	47.73	51.48	24.91	124.12	585	1,005	617	2,208
Wholesale Trade	624.37	34.37	49.99	708.73	50.54	12.78	15.89	79.21	822	254	393	1,469
Retail Trade	1,225.07	90.79	154.10	1,469.97	164.23	31.01	48.99	244.23	4,840	671	1,212	6,723
Finance	15.14	5.18	6.14	26.46	5.95	1.83	1.95	9.73	93	36	48	177
Services	801.24	259.56	241.22	1,302.02	211.53	93.93	76.66	382.11	4,506	2,064	1,898	8,468
<b>Total</b>	<b>3,537.67</b>	<b>699.15</b>	<b>695.02</b>	<b>4,931.84</b>	<b>624.38</b>	<b>255.62</b>	<b>220.86</b>	<b>1,100.87</b>	<b>13,222</b>	<b>5,228</b>	<b>5,469</b>	<b>23,919</b>

Comparing current total economic benefits to expected benefits assuming a higher state of maintenance reveals that the county would realize an increase of \$595.1 million in business volume, \$138.5 million in personal income, 3,094 jobs, and \$24.6 million in tax revenues.

### Economic Benefits Generated by Purchases of Non-Marine-Related Items

This maintenance scenario should not significantly impact the sale of non-marine-related items by businesses that are not located on the Waterways. These benefits should be equivalent

to those under current Waterways conditions. Under this assumption, retail sales of non-marine-related items should generate total economic activity equal to \$54.6 million in business volume, \$12.7 million in personal income, and 286 jobs (Table M-15). The \$5.8 million in tax revenues generated under this scenario includes \$3.0 million in fuel taxes distributed as \$1.4 million in state levied taxes and \$1.6 million in locally levied taxes.

**Table M-15. Summary of Economic Benefits of Non-Marine-Related Items Purchased by Boaters in Broward County, Assuming Vessel Draft Restrictions of 10 Feet**

Activity	Economic Impacts			
	Direct	Indirect	Induced	Total
Business Volume (Millions)	\$39.64	\$6.98	\$8.00	<b>\$54.63</b>
Personal Income (Millions)	\$7.63	\$2.50	\$2.54	<b>\$12.68</b>
Employment	173	50	63	<b>286</b>
Tax Revenues (Millions)	\$4.88	\$0.33	\$0.55	<b>\$5.76</b>

**Combined Economic Benefits**

The combined total benefits of marine-related businesses and purchases of non-marine-related items from businesses not located on the Waterways under this scenario are presented in Table M-16. Combined benefits include \$4.986 billion in business volume, \$1.114 billion in personal income, 24,205 jobs, and \$202.9 million in tax revenues. State and local tax revenues include \$3.0 million in fuel taxes generated by gasoline sales to boaters. These benefits are an increase of \$595.1 million in business volume, \$138.5 million in personal income, 3,094 jobs, and \$24.6 million in tax revenues compared to current existing conditions on the Waterways.

**Table M-16. Summary of Total Economic Benefits of the Waterways in Broward County, Assuming Vessel Draft Restrictions of 10 Feet**

Activity	Total Economic Impacts			
	Direct	Indirect	Induced	Total
Business Volume (Millions)	\$3,577.32	\$706.14	\$703.02	<b>\$4,986.47</b>
Personal Income (Millions)	\$632.02	\$258.12	\$223.40	<b>\$1,113.54</b>
Employment	13,395	5,278	5,532	<b>24,205</b>
Tax Revenues (Millions)	\$119.76	\$35.02	\$48.08	<b>\$202.86</b>

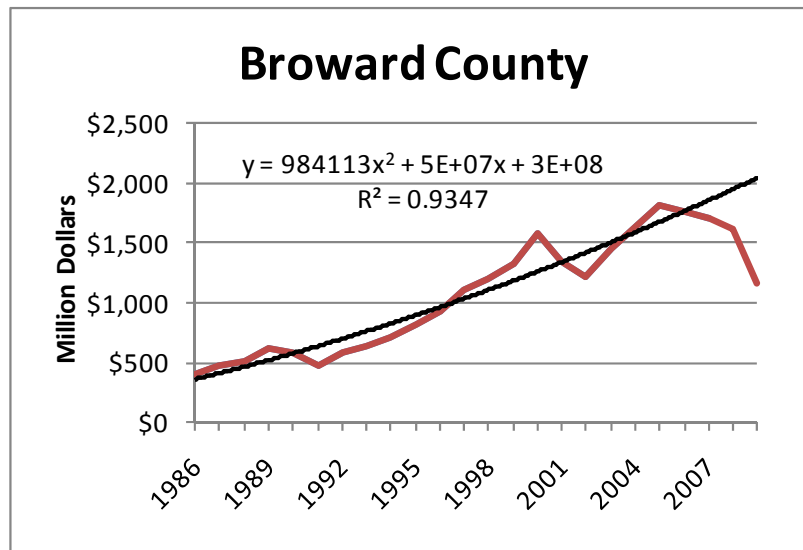
The combined business volume generated from the Waterways assuming 10-foot vessel draft restrictions includes a direct benefit of \$3.577 billion, an indirect benefit of \$706.1 million, and an induced benefit of \$703.0 million. Combined personal income generated under this scenario consists of \$623.0 million in direct benefits, \$258.1 million in indirect benefits, and \$223.4 million in induced benefits. Combined employment includes 13,395 direct jobs, 5,278 indirect jobs, and 5,532 induced jobs. State and local tax revenues include \$119.8 million generated by direct activities, \$35.0 million generated by indirect activities, and \$48.1 million generated by induced activities. The \$119.8 million in tax revenues generated by direct activity includes \$3.0 million in fuel taxes.

### **The Impact of the 2007-2009 U.S. Economic Recession**

In December 2007, the U.S. economy entered a recession that would last 18 months, until June 2009, the longest recession since World War II. The impact of the recession was evident in the FDOR recorded gross sales throughout Florida and in the marine industries as measured by Kind Code 28. The downturn in the economy, as evidenced in the decrease in total gross sales in the State in general and specifically in the decrease in gross sales in Kind Code 28, indicated a need to estimate the impact of the recession on marine-related businesses. To estimate the impact of the recession, the trend in gross sales of Kind Code 28 established over the 20-year period prior to the onset of the recession was used to estimate the theoretical gross sales in Broward County had the recession not occurred and gross sales had continued to increase at the rates experienced over the previous 20-year period. These gross sales, assuming the recession did not occur, were used to estimate the non-recession change in direct sales in the county and the total economic benefits of the Waterways assuming no recession. These values were compared to the estimated total economic benefits based on the change in actual reported gross sales for Kind Code 28 in 2009 to estimate the total impact of the recession on marine-related business in the county.

#### **Estimating Gross Sales Assuming That the Recession Did Not Occur**

Figure M-1 graphically illustrates the gross sales for Kind Code 28 for Broward County from 1986 through 2009. Gross sales peaked in 2005 at \$1.84 billion and declined to \$1.16 billion by 2009.



**Figure M-1. Broward County, FDOR Reported Gross Sales of Kind Code 28, 1986 Through 2009**

The black line on the graph is the trend line exhibited by the gross sales for Kind Code 28 from 1986 to 2007. The trend line is based on the following polynomial equation:

$$Y = 984,113x^2 + 5E+07x + 3E+08$$

Where:

Y = expected value

x = known value (year, expressed as year for which expected value is being estimated minus the base year of 1986)

E+ = times 10 raised to the power following the “+” sign

With an  $R^2$  value of 0.9347.

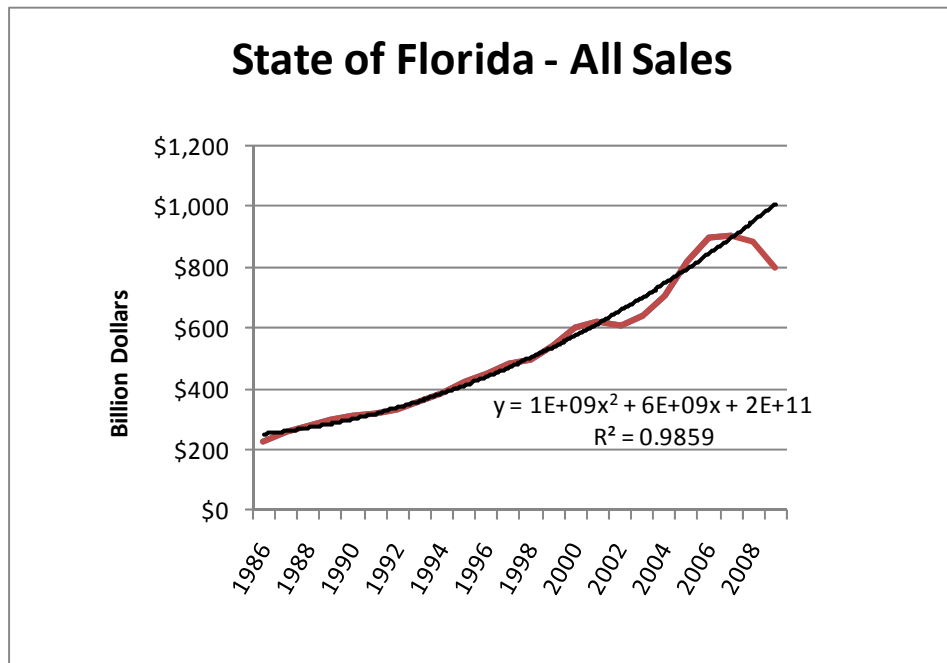
The  $R^2$  value explains how well the regression line, or equation, approximates the known data points. The closer the  $R^2$  value is to 1, the higher the correlation of the trend line is to the data.

The polynomial equation presented above was used to estimate the gross retail sales for Kind Code 28 for the county for 2009 assuming that the recession did not occur. Excluding the impact of the recession, gross sales in 2009 should have trended to \$2.06 billion, 78 percent greater than actual reported sales. In other words, the recession reduced marine-related gross sales, as reported to FDOR, by \$902.8 million in 2009.



Port operations are influenced less by local marine-related sales and more by macro-economic factors within the region served by the port. For this reason, the direct impact of port operations was updated to current values using the percent change in reported gross sales of all Kind Codes for the State of Florida. From 2007 to 2009, gross sales for the State of Florida decreased by 12 percent.

Figure M-2 graphically illustrates the gross sales for all Kind Codes for the State from 1986 through 2009. Gross sales peaked in 2007 at \$901 billion and declined to \$796 billion in 2009.



**Figure M-2. State of Florida, Total FDOR Reported Gross Sales of All Kind Codes, 1986 Through 2009**

The trend line exhibited by the gross sales of all Kind Codes in the state from 1986 to 2007 is described by the following polynomial equation:

$$Y = 1E+09x^2 + 6E+09x + 2E+11$$

Where:

Y = expected value

x = known value (year, expressed as year for which expected value is being estimated minus the base year of 1986)

E+ = times 10 raised to the power following the “+” sign

With an R<sup>2</sup> value of 0.9859.

The polynomial equation describing the gross sales of all Kind Codes for the State was used to estimate the gross sales for the state for 2009 assuming that the recession did not occur. Excluding the impact of the recession, total gross sales in 2009 in the State should have trended slightly over \$920 billion, 15 percent greater than actual reported sales. This percent increase was used to update the direct impacts of port operations in the county.

The gross sales reported in Kind Code 28 in the year that the original analysis was conducted (2007) was compared to the estimated theoretical gross sales in the county if the recession had not occurred to calculate the percent change between the two values. This percent change was applied to the direct marine-related business activity (as presented in the original analysis) to estimate the direct current impact of marine-related businesses if the recession had not occurred. As illustrated in Table M-17, if the recession had not occurred, total direct marine-related business sales would have increased from \$4.24 billion in 2007 to \$5.09 billion in 2009. The updated Table M-17 data were combined with the distribution of marine revenues by type (as obtained from the original analysis and presented in Table M-4 in this report) to develop updated estimates of total non-recession marine-related business revenues (see Table M-18). These updated values were input into the IMPLAN regional economic impact model to estimate the total (direct, indirect, and induced) benefits of the District’s Waterways in Broward County measured as increases in business volume, personal income, employment, and tax revenues.

**Table M-17. Total Marine-Related Business Volume in Broward County,  
Aggregated by Business Type, 2007 and 2009,  
Assuming the 2007-2009 U.S. Economic Recession Did Not Occur**

<b>Business Type</b>	<b>2007 Total Marine Business Volume</b>	<b>2009 Total Marine Business Volume</b>
Boat Dealers	\$425,205,307	\$517,547,019
Yacht Brokers	\$429,160,771	\$522,361,490
Marinas	\$145,383,696	\$176,956,631
Boat Yards	\$66,244,010	\$80,630,202
Canvas Products/Upholstery	\$54,673,245	\$66,546,618
Boat Repairs	\$97,414,262	\$118,569,689
Outboard Repairs	\$159,057,200	\$193,599,605
Marine Equipment/Electronics	\$341,147,939	\$415,234,937
Marine Construction	\$117,008,058	\$142,418,664
Auto Parts	\$3,193,814	\$3,887,414
Tackle/Dive Equipment	\$40,656,964	\$49,486,425
Marine/Sporting Goods Retail	\$171,110,451	\$208,270,457
Wholesaler	\$713,011,203	\$867,855,637
Boat Manufacturer	\$254,074,000	\$309,251,176
Equipment Manufacturer	\$240,189,976	\$292,351,963
Ski/Boating Instruction	\$7,383,158	\$8,986,556
Boat Trailers	\$3,018,977	\$3,674,607
A/C Heating	\$45,834,167	\$55,787,960
Signs	\$2,989,966	\$3,639,296
Water Transportation	\$86,120,550	\$104,823,325
Clubs/Associations	\$8,533,627	\$10,386,872
Engineering/Surveyors	\$31,385,301	\$38,201,238
Consultants	\$14,857,769	\$18,084,426
Legal Services	\$1,795,200	\$2,185,063
Insurance	\$35,237,172	\$42,889,618
Interior Design	\$8,664,059	\$10,545,630
Business/Personal Services	\$67,422,749	\$82,064,928
Storage	\$1,534,909	\$1,868,245
Boating Services	\$118,873,261	\$144,688,932
Auto/Cycle Dealers	\$30,243,972	\$36,812,047
Camp/Resort/Lodging	\$204,680	\$249,130
Restaurant/Seafood Market	\$31,373,746	\$38,187,173
Miscellaneous Retail/Other	\$28,178,674	\$34,298,228
Charter Boats/Rentals	\$77,593,025	\$94,443,879
Port Tenants	\$385,720,289	\$393,736,841
<b>Total</b>	<b>\$4,244,496,147</b>	<b>\$5,090,521,921</b>

**Table M-18. Total Marine-Related Business Revenue by Business Type, Distributed by Business Activity, Assuming the 2007-2009 U.S. Economic Recession Did Not Occur**

Business Type	Total Marine Business Volume		Construction Volume		Transportation Volume		Retail Trade Volume		Used Boat Sales Volume		Manufacturing Trade Volume		Wholesale Trade Volume		Finance Volume		Service Volume	
	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume
Boat Dealers	\$517,547,019	\$0	\$0	\$0	\$340,266,017	\$51,485,492	\$0	\$0	\$17,637,083	\$0	\$0	\$8,062,178	\$2,296,945	\$115,436,402				
Yacht Brokers	\$522,361,490	\$0	\$0	\$215,364	\$28,019,917	\$417,637,083	\$0	\$0	\$690,296	\$0	\$0	\$0	\$0	\$70,828,899				
Marinas	\$176,956,631	\$0	\$0	\$0	\$40,950,116	\$2,568,424	\$0	\$0	\$765,428	\$0	\$0	\$0	\$0	\$132,672,670				
Boat Yards	\$80,630,202	\$0	\$0	\$0	\$22,819,868	\$4,215,670	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$14,612,724				
Canvas Products/Upholstery	\$66,546,618	\$658,786	\$0	\$0	\$7,355,040	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$10,631,394				
Boat Repairs	\$118,569,689	\$0	\$0	\$0	\$29,139,083	\$4,079,957	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$56,790,914				
Outboard Repairs	\$193,599,605	\$0	\$0	\$5,722	\$14,680,840	\$1,005,097	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$69,252,769				
Marine Equipment/Electronics	\$415,234,937	\$0	\$0	\$1,146,335	\$284,696,622	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$94,799,232				
Marine Construction	\$142,418,664	\$132,774,845	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$8,954,971				
Auto Parts	\$3,887,414	\$0	\$0	\$0	\$3,390,617	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$124,198				
Tackle/Dive Equipment	\$49,486,425	\$0	\$0	\$4,139,458	\$23,427,206	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$21,533,874				
Marine/Sporting Goods Retail	\$208,270,457	\$130,264	\$0	\$390,794	\$196,075,453	\$390,794	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$162,833				
Wholesaler	\$867,855,637	\$0	\$0	\$3,519,210	\$12,395,982	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$81,746,587				
Boat Manufacturer	\$309,251,176	\$0	\$0	\$0	\$18,482,104	\$18,014,588	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0				
Equipment Manufacturer	\$292,351,963	\$10,588	\$0	\$3,529	\$9,003,182	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,646,956				
Ski/Boating Instruction	\$8,986,556	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$8,986,555				
Boat Trailers	\$3,674,607	\$0	\$0	\$0	\$3,674,607	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0				
A/C Heating	\$55,787,960	\$35,311	\$0	\$0	\$13,902,851	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$27,946,944				
Signs	\$3,639,296	\$0	\$0	\$0	\$550,723	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$509,216				
Water Transportation	\$104,823,325	\$0	\$0	\$4,016,219	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$96,790,889				
Clubs/Associations	\$10,386,872	\$0	\$0	\$0	\$3,277,820	\$260,247	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$6,588,563				
Engineering/Surveyors	\$38,201,238	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$37,816,151				
Consultants	\$18,084,426	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$15,592,874				
Legal Services	\$2,185,063	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,185,063				
Insurance	\$42,889,618	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$42,889,620				
Interior Design	\$10,545,630	\$0	\$0	\$0	\$4,058,641	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$719,590				
Business/Personal Services	\$82,064,928	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$74,875,173				
Storage	\$1,868,245	\$0	\$0	\$0	\$93,412	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,774,833				
Boating Services	\$144,688,932	\$0	\$0	\$93,522	\$107,099,506	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$23,249,026				
Auto/Cycle Dealers	\$36,812,047	\$0	\$0	\$0	\$18,406,023	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,681,204				
Camp/Resort/Lodging	\$249,130	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$249,130				
Restaurant/Seafood Market	\$38,187,173	\$0	\$0	\$0	\$38,187,173	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0				
Miscellaneous Retail/Other	\$34,298,228	\$0	\$0	\$0	\$32,222,830	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$545,635				
Charter Boats/Rentals	\$94,443,879	\$0	\$0	\$0	\$5,189,223	\$2,818,723	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$86,435,886				
Port Tenants	\$393,736,841	\$0	\$0	\$361,259,858	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$32,476,990				
<b>Total</b>	<b>\$5,090,521,921</b>	<b>\$133,609,795</b>	<b>\$13,257,364,857</b>	<b>\$374,790,011</b>	<b>\$502,476,075</b>	<b>\$685,972,503</b>	<b>\$970,676,486</b>	<b>\$22,124,365</b>	<b>\$1,143,507,765</b>									

If the recession had not occurred, business activity would have been 20 percent greater than estimated for 2009. Total marine-related business revenue, assuming no recession, would have been approximately \$5.09 billion in 2009, an increase of \$2.10 billion from the \$2.986 billion in current business activity.

### **Economic Benefits Generated by Marine-Related Business**

If the recession had not occurred and spending patterns for marine-related goods and services had continued on the trend established over the previous 20-year period, marine-related businesses in the county would be expected to generate a total of \$7.350 billion in business volume, \$1.627 billion in personal income, and 35,521 jobs (Table M-19). State and local tax revenues would have been \$292.9 million. This is an increase of \$3.014 billion in business volume, \$664.3 million in personal income, 14,696 jobs, and \$120.3 million in tax revenues compared to estimated existing conditions. The sales expected to be generated by marine-related businesses under this scenario include a direct benefit of \$5.304 billion and combined indirect and induced benefits of \$2.047 billion. The total personal income generated under this maintenance scenario includes a direct benefit of \$931.0 million and combined indirect and induced benefits of \$695.6 million. Total employment benefits include 19,875 direct jobs, 7,565 indirect jobs, and 8,081 induced jobs. The \$292.9 million in state and local tax revenues includes \$172.2 million generated by direct benefits, \$50.4 million generated by indirect benefits, and \$70.2 million generated by induced benefits.

**Table M-19. Summary of Economic Benefits of Marine-Related Businesses in Broward County, Assuming the 2007-2009 U.S. Economic Recession Did Not Occur**

Business Activity	Business Volume (Sales) (Millions of Dollars)				Personal Income (Wages) (Millions of Dollars)				Employment (Jobs)			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Construction	138.54	46.66	55.39	240.59	51.92	18.18	17.60	87.70	978	339	436	1,753
Manufacturing	704.75	248.26	201.33	1,154.35	172.30	82.44	63.95	318.69	2,673	1,527	1,585	5,785
Transportation	387.53	140.40	92.01	619.93	56.57	59.85	29.23	145.66	709	1,169	724	2,603
Wholesale Trade	1,020.18	56.44	80.86	1,157.47	81.39	21.03	25.70	128.12	1,310	417	636	2,362
Retail Trade	1,849.59	137.31	231.60	2,218.50	246.52	46.91	73.62	367.04	7,340	1,015	1,821	10,177
Finance	22.80	7.80	9.25	39.85	8.96	2.76	2.94	14.66	140	54	73	267
Services	1,180.47	382.76	356.50	1,919.74	313.32	138.12	113.29	564.73	6,725	3,044	2,805	12,575
<b>Total</b>	<b>5,303.87</b>	<b>1,019.64</b>	<b>1,026.93</b>	<b>7,350.44</b>	<b>930.99</b>	<b>369.28</b>	<b>326.34</b>	<b>1,626.61</b>	<b>19,875</b>	<b>7,565</b>	<b>8,081</b>	<b>35,521</b>

### **Purchases of Non-Marine-Related Items**

The survey of registered boat owners conducted as part of this analysis included questions concerning the impact that the recession had on the number of boating trips taken over the previous 12-month period and the amount spent on each boating trip. Review of the responses concerning the amount of money boaters would have spent per boating trip, had the recession not occurred, revealed that the question may not have been answered in a consistent manner. It appears that the question was answered in one of four ways: (1) reporting the additional amount (above the amount actually spent) that would have been spent on the average trip had the recession not occurred (which was the intent of the question); (2) reporting the additional amount (above the amount actually spent) that would have been spent on all trips for the entire previous 12-month period had the recession not occurred; (3) reporting the total amount (including the amount actually spent) that would have been spent on the average trip if the recession had not occurred; (4) reporting the total amount (including the amount actually spent) that would have been spent on all trips for the entire previous 12-month period had the recession not occurred. Because of the inconsistent manner in which the question was answered, the recession-related expenditure data was not used in the analysis. The impact of the recession was based solely on the number of additional trips that would have occurred without the recession.

To ensure adequate response in each boat size classification, the responses from Palm Beach, Broward, and Miami-Dade counties were combined when estimating the average impact of the recession on number of trips of each boat size class. The average number of additional trips that boaters would have taken, by boat size, were added to the number of trips per year that were taken, to obtain the total number of trips, per boater, per year had the recession not occurred. The total number of trips per boater was applied to the number of registered pleasure boats in each boat size class in Broward County that used the Waterways over the past 12 months to estimate the total number of trips on the Waterways per year. The total number of trips on the Waterways per year was applied to the total expenditures per trip for each boat size class. The total expenditures, assuming that the recession had not occurred, of non-marine items at establishments not located on the Waterways include \$31.5 million for gasoline and \$21.3 million for food, drinks, and ice.

### **Economic Benefits Generated by Purchases of Non-Marine-Related Items**

As illustrated in Table M-20, the expected \$52.7 million in retail sales of gas, food, drinks, and ice to recreational boaters from businesses not located on the Waterways would generate benefits of \$75.25 million in business volume, \$16.8 million in personal income, and 378 jobs. State and local tax revenues would have been \$7.6 million, including \$6.5 million generated by direct activities that includes \$4.0 million in fuel taxes. Compared to existing conditions, these benefits would have been an increase of about \$17.6 million in business volume, \$4.1 million in personal income, 92 jobs, and \$1.9 million in tax revenues.

**Table M-20. Summary of Economic Benefits of Non-Marine-Related Items Purchased by Boaters in Broward County, Assuming the 2007-2009 U.S. Economic Recession Did Not Occur**

<b>Activity</b>	<b>Economic Impacts</b>			
	<b>Direct</b>	<b>Indirect</b>	<b>Induced</b>	<b>Total</b>
Business Volume (Millions)	\$52.42	\$9.24	\$10.59	<b>\$72.25</b>
Personal Income (Millions)	\$10.10	\$3.31	\$3.36	<b>\$16.77</b>
Employment	229	66	83	<b>378</b>
Tax Revenues (Millions)	\$6.46	\$0.44	\$0.72	<b>\$7.62</b>

### **Combined Economic Benefits**

The combined total benefits of marine-related businesses and purchases of non-marine-related items from businesses not located on the Waterways under the “No Recession” scenario are presented in Table M-21. Combined benefits would have included \$7.423 billion in business volume, \$1.643 billion in personal income, 35,899 jobs, and \$300.5 million in state and local tax revenues. State and local tax revenues would have included \$4.0 million in fuel taxes generated by the sale of gasoline. This is a difference of \$3.031 billion in business volume, \$668.4 million in personal income, 14,788 jobs, and \$122.2 million in tax revenues compared to current existing conditions on the Waterways.

**Table M-21. Summary of Total Economic Benefits of the Waterways in  
Broward County, Assuming the 2007-2009  
U.S. Economic Recession Did Not Occur**

<b>Activity</b>	<b>Total Economic Impacts</b>			
	<b>Direct</b>	<b>Indirect</b>	<b>Induced</b>	<b>Total</b>
Business Volume (Millions)	\$5,356.29	\$1,028.88	\$1,037.52	<b>\$7,422.69</b>
Personal Income (Millions)	\$941.09	\$372.59	\$329.70	<b>\$1,643.38</b>
Employment	20,104	7,632	8,164	<b>35,899</b>
Tax Revenues (Millions)	\$178.69	\$50.83	\$70.96	<b>\$300.48</b>