

## **Appendix E**

# **UPDATE OF THE ECONOMIC BENEFITS OF THE DISTRICT'S WATERWAYS IN ST. JOHNS 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 St. Johns County were estimated in *An Economic Analysis of the District's Waterways in St. Johns County*, dated September 2005 (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 St. Johns County, as presented in the original analysis, to current values using industry accepted methods. 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. The impact of the 2007-2009 U.S. economic recession on marine-related businesses in the county could not be estimated due to anomalies in Florida Department of Revenue (FDOR) reported gross sales data for the county. 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 benefits 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 St. Johns County.

Section II summarizes the findings of the original analysis as presented in *An Economic Analysis of the District's Waterways in St. Johns County*, dated September 2005. Economic benefits are estimated for each of the three scenarios evaluated: (1) prior existing conditions (at the time of the original analysis in 2004); (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 three scenarios are presented: (1) current existing conditions (which have been affected by the recession); (2) assuming a cessation of maintenance; and (3) assuming a higher state of maintenance. Impacts are measured as changes in business volume, personal income, jobs, and tax revenues. The anomalies in the FDOR reported gross sales data for the county that prevented the estimation of the impacts of the Waterways assuming that the 2007-2009 U.S. economic recession did not occur are also presented.

## **Summary of Findings**

A summary of the findings of the economic benefits of the three scenarios evaluated are presented in Table E-1. Current updated benefits in 2010 dollars include \$180.9 million in business volume, \$41.3 million in personal income, 1,090 jobs, and \$7.7 million in tax revenues. Compared to the findings in the original analysis, this is a decrease of \$57.2 million in business volume, \$31.4 million in personal income, and 1,067 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 \$56.0 million in business volume, \$13.7 million in personal income, 364 jobs, and \$3.2 million in tax revenues. This is a 60 to 70 percent decrease in benefits compared to existing conditions. The economic benefits of the Waterways assuming a higher state of maintenance of the Waterways include \$196.7 million in business volume, \$45.7 million in personal income, 1,213 jobs, and \$8.5 million in tax revenues. This is an approximately nine to 11 percent increase in benefits compared to existing conditions.

**Table E-1. Summary of Total Economic Benefits of the Waterways in St. Johns County**

Activity	Business Volume (Millions)				Personal Income (Millions)				Employment			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Current Existing Impacts	\$138.52	\$25.46	\$16.89	<b>\$180.87</b>	\$27.60	\$8.68	\$5.04	<b>\$41.33</b>	758	192	140	<b>1,090</b>
Three-Foot Draft Restriction Impacts	\$43.59	\$6.81	\$5.61	<b>\$56.01</b>	\$9.72	\$2.33	\$1.67	<b>\$13.73</b>	267	50	47	<b>364</b>
Twelve-Foot Draft Restriction Impacts	\$150.48	\$27.51	\$18.68	<b>\$196.67</b>	\$30.71	\$9.40	\$5.57	<b>\$45.69</b>	850	208	155	<b>1,213</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 St. Johns County**

The Intracoastal Waterway extends about 47 miles through St. Johns County. The waterway enters the county just north of waterway Mile 750. At this point, the waterway leaves Pablo Creek and extends 10 miles on Palm Valley Cut to Tolomato River at waterway Mile 762. Land use on the east bank of the Palm Valley Cut is characterized by upscale residential development while the west side of the waterway is undeveloped. The waterway extends down Tolomato River, also known as North River, through undeveloped areas, including the Guana River State Wildlife Management Area on the east bank. St. Augustine Inlet allows offshore access from the waterway at St. Augustine, just south of the Vilano Beach Bridge (waterway Mile 776). At the inlet, the waterway turns west onto Matanzas River. Just south of the inlet, off of the waterway (at Mile 777), Salt Run supplies boaters with access to anchorages. The waterway extends south, past the Bridge of Lions and the urban development of St. Augustine on Matanzas River. San Sebastian River flows into the waterway at Mile 780 and allows boaters access to marina facilities. At waterway Mile 789, the waterway extends south on a dredged channel for about five miles to Matanzas Inlet. The waterway leaves St. Johns County south of Matanzas Inlet near Mile 797.



## II. SUMMARY OF FINDINGS OF THE ORIGINAL ANALYSIS

Under existing conditions, the original analysis estimated that the 155 marine-related businesses in St. Johns County generated direct sales of \$131.2 million in 2004. 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 2004 were estimated as \$172.7 million in business sales, \$62.5 million in personal income, and 1,883 jobs. The direct business volume benefits from the original analysis, as presented in Table E-2, were adjusted to reflect the same basis as the direct business volume benefits presented in the updated analysis. In the original analyses conducted before 2007, only the margined portion (that portion that remains in the region to generate indirect and induced benefits) of the retail and wholesale trade business volume was reported in the final report. Subsequent to 2007, the total direct business volume benefit, including the portion that “leaks out” of the local economy, was reported. This change in method of reporting did not impact the indirect or induced business volume or the personal income or employment benefits.

**Table E-2. Summary of 2004 Total Economic Benefits of the Waterways in St. Johns 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
2004 Total Existing Impacts	\$160.83	\$19.22	\$58.01	<b>\$238.06</b>	\$41.31	\$7.30	\$24.13	<b>\$72.74</b>	1,225	210	722	<b>2,157</b>
2004 Three-Foot Draft Restriction Impacts	\$59.73	\$6.98	\$18.77	<b>\$85.48</b>	\$13.37	\$2.70	\$8.06	<b>\$24.13</b>	447	83	242	<b>772</b>
2004 Twelve-Foot Draft Restriction Impacts	\$172.65	\$21.02	\$62.42	<b>\$256.09</b>	\$44.55	\$7.98	\$25.95	<b>\$78.48</b>	1,333	231	778	<b>2,342</b>

Non-marine-related businesses also were shown to benefit from marine activities in the county. Boaters in the county purchased a total of \$29.6 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 \$40.5 million in business activity, \$10.2 million in personal income, and 324 jobs. The economic benefit of the Waterways under existing conditions (the benefit of marine-related businesses and purchases by recreational boaters) totaled \$213.1 million in business volume, \$72.7 million in personal income, and 2,157 jobs (see Table E-2). Tax revenues attributable to the Waterways were not estimated in the original analysis.

Marine-related businesses in St. Johns County were estimated to generate direct sales of \$34.9 million in 2004, assuming cessation of maintenance of the Waterways. The total benefit of marine businesses in 2004 under this scenario was estimated as \$39.7 million in business sales, \$15.3 million in personal income, and 492 jobs. In addition, boaters in the county purchased a total of \$25.2 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 \$34.5 million in business activity, \$8.8 million in personal income, and 280 jobs. The total combined economic benefits of the Waterways assuming three-foot vessel draft restrictions, as presented in the original analysis, were \$74.2 million in business volume, \$24.1 million in personal income, and 772 jobs.

In the original analysis it was estimated that in 2004, marine-related businesses in St. Johns County would generate direct sales of \$143.5 million if vessel draft restrictions were increased to 12 feet MLW. The total benefit of marine-related business under this scenario was estimated as \$188 million in business sales, \$68.2 million in personal income, and 2,018 jobs. Boaters were estimated to purchase a total of \$29.6 million in gasoline, food, drinks, and ice for consumption on the county's Waterways, which resulted in a total benefit of \$40.5 million in business activity, \$10.2 million in personal income, and 324 jobs. The total combined economic benefits of the Waterways, assuming 12-foot vessel draft restrictions, totaled \$228.4 million in business volume, \$78.5 million in personal income, and 2,342 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 \$131.2 million. The data presented in the original analysis that outlined the direct impact of marine-related businesses in St. Johns 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 2004, the year that the original analysis was conducted, the firms classified as Kind Code 28 reported \$32.7 million in gross retail sales. In 2009, the latest year that data is available, Kind Code 28 firms reported total gross sales of \$30.5 million. This constitutes a decrease of seven percent in gross sales over the five-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.

Table E-3 presents the 2004 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 \$131.2 million in 2004 to \$122.3 million in 2009.

The original analysis included the distribution of business volume for each marine-related business type and is reproduced here as Table E-4. For this analysis, the business activity distribution (Table E-4) for each business type was applied to the 2009 updated marine-related business volume (Table E-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 E-4, on average 75 percent of the business volume generated by a boat dealer would actually be retail trade, 10 percent would be used boat sales, five percent would be finance activities, and 10 percent would be services. Applying the percent distribution by business type and activity in Table E-4 to the

2009 updated marine-related business volume of \$122.3 million in Table E-3 results in the summary of updated business volume distributed by business activity, as presented in Table E-5.

**Table E-3. Total Direct Marine-Related Business Volume in St. Johns County, Aggregated by Business Type, 2004 and 2009**

<b>Business Type</b>	<b>2004 Total Marine Business Volume</b>	<b>2009 Total Marine Business Volume</b>
Boat Dealers	\$4,590,000	\$4,277,822
Yacht Brokers	\$2,542,376	\$2,369,462
Marinas	\$18,138,062	\$16,904,443
Canvas Products/Upholstery	\$2,507,390	\$2,336,856
Boat Repairs	\$6,642,992	\$6,191,184
Marine Equipment/Electronics	\$9,388,250	\$8,749,729
Marine Construction	\$13,179,202	\$12,282,848
Tackle/Dive Equipment	\$1,560,835	\$1,454,678
Marine/Sporting Goods Retail	\$8,493,629	\$7,915,954
Wholesaler	\$2,042,000	\$1,903,118
Boat Manufacturer	\$48,642,000	\$45,333,724
Engineering/Surveyors	\$408,000	\$380,251
Business/Personal Services	\$3,383,007	\$3,152,919
Storage	\$42,000	\$39,143
Boating Services	\$2,582,207	\$2,406,584
Auto/Cycle Dealers	\$3,000,000	\$2,795,962
Auto Repair	\$518,107	\$482,869
Camp/Resort/Lodging	\$306,000	\$285,188
Miscellaneous Retail/Other	\$68,600	\$63,934
Charter Boats/Rentals	\$3,151,428	\$2,937,091
<b>Total</b>	<b>\$131,186,085</b>	<b>\$122,263,760</b>

**Table E-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 Manufacturing	Percent Wholesale	Percent Finance	Percent Service		
Boat Dealers	0.00%	0.00%	75.00%	10.00%	0.00%	0.00%	5.00%	10.00%		
Yacht Brokers	0.00%	0.00%	37.02%	41.15%	0.00%	0.00%	3.29%	18.54%		
Marinas	0.00%	0.00%	34.90%	1.72%	0.00%	0.86%	0.00%	62.52%		
Canvas Products/Upholstery	0.00%	0.00%	11.30%	0.00%	21.10%	0.00%	0.00%	67.59%		
Boat Repairs	0.00%	0.00%	7.90%	0.00%	3.53%	0.00%	0.00%	85.04%		
Marine Equipment/Electronics	0.00%	0.00%	65.00%	0.00%	0.00%	0.00%	0.00%	35.00%		
Marine Construction	98.66%	0.00%	1.34%	0.00%	0.00%	0.00%	0.00%	0.00%		
Tackle/Dive Equipment	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%		
Marine/Sporting Goods Retail	0.00%	0.00%	75.71%	0.00%	0.00%	24.29%	0.00%	0.00%		
Wholesaler	0.00%	0.00%	20.18%	0.00%	0.00%	79.82%	0.00%	0.00%		
Boat Manufacturer	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%		
Engineering/Surveyors	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%		
Business/Personal Services	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%		
Storage	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%		
Boating Services	0.00%	10.00%	11.15%	0.00%	0.00%	9.78%	0.00%	69.07%		
Auto/Cycle Dealers	0.00%	0.00%	60.00%	0.00%	0.00%	0.00%	20.00%	20.00%		
Auto Repair	0.00%	0.00%	79.35%	0.00%	0.00%	1.09%	0.00%	19.57%		
Camp/Resort/Lodging	0.00%	0.00%	80.00%	0.00%	0.00%	0.00%	0.00%	20.00%		
Miscellaneous Retail/Other	0.00%	0.00%	65.00%	0.00%	0.00%	0.00%	0.00%	35.00%		
Charter Boats/Rentals	0.00%	0.00%	32.30%	0.00%	0.00%	0.00%	0.00%	67.70%		
<b>Total</b>	<b>9.91%</b>	<b>0.20%</b>	<b>22.92%</b>	<b>1.39%</b>	<b>37.66%</b>	<b>3.31%</b>	<b>0.70%</b>	<b>24.04%</b>		

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

Business Type	Total Marine Business Volume										
	Business Volume	Construction Volume	Transportation Volume	Retail Trade Volume	Used Boat Sales Volume	Manufacturing Volume	Wholesale Trade Volume	Finance Volume	Service Volume		
Boat Dealers	\$4,277,822	\$0	\$0	\$3,208,366	\$427,782	\$0	\$0	\$213,891	\$427,782		
Yacht Brokers	\$2,369,462	\$0	\$0	\$877,142	\$975,012	\$0	\$0	\$78,002	\$439,307		
Marinas	\$16,904,443	\$0	\$0	\$5,899,085	\$290,962	\$0	\$145,481	\$0	\$10,568,914		
Canvas Products/Upholstery	\$2,336,856	\$0	\$0	\$264,173	\$0	\$493,097	\$0	\$0	\$1,579,585		
Boat Repairs	\$6,191,184	\$0	\$0	\$489,025	\$0	\$218,713	\$218,713	\$0	\$5,264,742		
Marine Equipment/Electronics	\$8,749,729	\$0	\$0	\$5,687,324	\$0	\$0	\$0	\$0	\$3,062,406		
Marine Construction	\$12,282,848	\$12,118,035	\$0	\$164,811	\$0	\$0	\$0	\$0	\$0		
Tackle/Dive Equipment	\$1,454,678	\$0	\$0	\$1,454,678	\$0	\$0	\$0	\$0	\$0		
Marine/Sporting Goods Retail	\$7,915,954	\$0	\$0	\$5,993,450	\$0	\$0	\$1,922,505	\$0	\$0		
Wholesaler	\$1,903,118	\$0	\$0	\$384,072	\$0	\$0	\$1,519,046	\$0	\$0		
Boat Manufacturer	\$45,333,724	\$0	\$0	\$0	\$0	\$45,333,724	\$0	\$0	\$0		
Engineering/Surveyors	\$380,251	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$380,251		
Business/Personal Services	\$3,152,919	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,152,919		
Storage	\$39,143	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$39,143		
Boating Services	\$2,406,584	\$0	\$240,625	\$268,390	\$0	\$0	\$235,431	\$0	\$1,662,138		
Auto/Cycle Dealers	\$2,795,962	\$0	\$0	\$1,677,577	\$0	\$0	\$0	\$559,192	\$559,192		
Auto Repair	\$482,869	\$0	\$0	\$383,146	\$0	\$0	\$0	\$0	\$94,475		
Camp/Resort/Lodging	\$285,188	\$0	\$0	\$228,150	\$0	\$0	\$0	\$0	\$57,038		
Miscellaneous Retail/Other	\$63,934	\$0	\$0	\$41,557	\$0	\$0	\$0	\$0	\$22,377		
Charter Boats/Rentals	\$2,937,091	\$0	\$0	\$948,628	\$0	\$0	\$0	\$0	\$1,988,464		
<b>Total</b>	<b>\$122,263,760</b>	<b>\$12,118,035</b>	<b>\$240,625</b>	<b>\$27,969,574</b>	<b>\$1,693,755</b>	<b>\$46,045,534</b>	<b>\$4,046,425</b>	<b>\$851,085</b>	<b>\$29,298,733</b>		

The values presented in Table E-5 are the total business volume of marine-related businesses. For instance, the \$28 million in retail sales, the \$1.7 million in used boat sales, and the \$4.0 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 E-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 St. Johns 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 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 St. Johns County. The benefits were measured as changes in business volume, personal income, employment, and tax revenues. As illustrated in Table E-6, sales to consumers (by marine-related businesses in St. Johns County) generate a total of \$165.6 million in business volume (sales), \$37.7 million in personal income (wages), and 1,011 jobs. State and local tax revenues were estimated at \$6.1 million. Tax revenues were not presented in Table E-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.

**Table E-6. Summary of Economic Benefits of Marine-Related Businesses in St. Johns 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	12.57	2.88	2.46	17.90	4.20	1.07	0.73	6.01	92	22	20	134
Manufacturing	47.39	10.73	5.54	63.67	8.24	3.66	1.66	13.56	196	80	46	322
Transportation	0.25	0.05	0.03	0.33	0.04	0.02	0.01	0.07	0	0	0	1
Wholesale Trade	4.25	0.24	0.26	4.76	0.48	0.08	0.08	0.64	18	2	2	22
Retail Trade	31.18	2.21	2.41	35.80	4.45	0.72	0.72	5.90	196	16	20	233
Finance	0.88	0.20	0.20	1.28	0.35	0.08	0.06	0.48	5	1	2	8
Services	30.26	7.10	4.52	41.88	7.29	2.42	1.35	11.05	195	58	38	291
<b>Total</b>	<b>126.77</b>	<b>23.42</b>	<b>15.41</b>	<b>165.61</b>	<b>25.06</b>	<b>8.05</b>	<b>4.60</b>	<b>37.70</b>	<b>704</b>	<b>180</b>	<b>128</b>	<b>1,011</b>

The \$165.6 million in total business volume generated by marine-related businesses is distributed as a direct benefit of \$126.8 million, an indirect benefit of \$23.4 million, and an induced benefit of \$15.4 million. The \$37.7 million in personal income includes a direct benefit of \$25.1 million and indirect and induced benefits of \$12.7 million. The 1,011 man-years of employment generated by marine-related businesses include 704 direct jobs, 180 indirect jobs, and 128 induced jobs. The \$6.1 million in state and local tax revenues includes \$3.4 million generated by direct benefits, \$1.5 million generated by indirect benefits, and \$1.2 million generated by induced benefits.



About one-third of the total economic benefits are generated by the manufacturing sector, including \$63.7 million in business sales, \$13.6 million in personal income, and 322 jobs. The second largest benefits are generated by the service sector, with \$41.9 million in sales, \$11.1 million in personal income, and 291 jobs.

### **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 St. Johns 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. St. Johns County boat owners returned a total of 74 completed questionnaires, of which three indicated that they no longer own a boat and 13 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, resulting in a total of 58 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 St. Johns 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 Nassau, Duval, and St. Johns 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 St. Johns 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 \$7.9 million for gasoline and \$3.9 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 St. Johns 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 \$11.8 million in retail purchases (\$7.9 million for gasoline sales and \$3.9 million for food, drinks, and ice) by recreational boaters from establishments not located on the Waterways were estimated to generate total economic benefits of \$15.3 million in business volume, \$3.6 million in personal income, 79 jobs, and \$1.6 million in tax revenues. As illustrated in Table E-7, the sales generated by these purchases include \$11.8 million in direct benefits and \$3.5 million in indirect and induced benefits. The total personal income includes \$2.6 million in direct benefits and \$1.1 million in indirect and induced benefits. The 79 jobs include 54 direct jobs, 13 indirect jobs, and 12 induced jobs. State and local tax revenues include \$1.4 million generated by direct activities, \$0.1 million generated by indirect activities, and \$0.12 million generated by induced activities. The \$1.4 million in tax revenues generated by direct activities includes \$0.83 million in fuel taxes generated by the sale of \$7.9 million in gasoline.

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

Activity	Economic Impacts			
	Direct	Indirect	Induced	Total
Business Volume (Millions)	\$11.75	\$2.04	\$1.48	<b>\$15.27</b>
Personal Income (Millions)	\$2.55	\$0.64	\$0.44	<b>\$3.63</b>
Employment	54	13	12	<b>79</b>
Tax Revenues (Millions)	\$1.41	\$0.10	\$0.12	<b>\$1.63</b>

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 St. Johns County fuel tax in 2010 was \$0.286 per gallon, including \$0.16 per gallon in state levied taxes and \$0.126 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.

**Combined Economic Benefits**

The total economic benefits of the Waterways include the benefits generated by marine-related businesses in St. Johns County (presented in Table E-6) and the purchase of non-marine-related items for consumption on the Waterways (presented in Table E-7). A summary of these benefits is presented in Table E-8. Total benefits consist of \$180.9 million in business volume, \$41.3 million in personal income, 1,090 jobs, and \$7.7 million in tax revenue. Total business volume benefits consist of \$138.5 million in direct sales and \$42.4 million in indirect and induced sales. Total personal income benefits consist of \$27.6 million in direct wages and \$13.7 million in indirect and induced wages. Total employment benefits consist of 758 direct jobs and 332 indirect and induced jobs. State and local tax revenues include \$4.9 million generated by direct activities, \$1.6 million generated by indirect activities, and \$1.3 million generated by induced activities. The \$4.9 million generated by direct activity includes \$0.83 million in fuel taxes generated by gasoline sales.

**Table E-8. Summary of Total Economic Benefits of the Waterways in St. Johns County, Under Current Existing Conditions**

Activity	Total Economic Impacts			
	Direct	Indirect	Induced	Total
Business Volume (Millions)	\$138.52	\$25.46	\$16.89	<b>\$180.87</b>
Personal Income (Millions)	\$27.60	\$8.68	\$5.04	<b>\$41.33</b>
Employment	758	192	140	<b>1,090</b>
Tax Revenues (Millions)	\$4.85	\$1.57	\$1.32	<b>\$7.74</b>

These benefits represent about a 24 percent decrease from the values presented in the original analysis in business volume, a 43 percent decrease in personal income, and a 50 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 seven 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 2004 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 2004 to 2010 was 15.4 percent. In other words, all other factors being held constant, the reported business output would have had to increase by approximately 15.4 percent, from 2004 to 2010, in order to maintain the same personal income and employment levels as reported in 2004. In addition, the total compensation costs for all civilian employees increased 16.7 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 16.7 percent more than they were paid in 2004. Therefore, business output and personal income would have to increase by 16.7 percent just to maintain the 2004 employment level. Another reason for the disparity between changes in business volume and employment is the change in output per person. For instance, from 2004 to 2010, output per person in the manufacturing industry experienced a 19.8 percent increase. This increase includes

the 16.7 percent increase in employee compensation, indicating that adjusted for increasing employee compensation, output per employee increased by about 3.1 percent from 2004 to 2010. In other words, in the amount of time it took an employee to produce \$1.00 of output in 2004, approximately \$1.198 of output could be produced in 2010, with increased employee compensation accounting for about \$0.167 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 St. Johns 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 \$34.9 million. 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 E-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 E-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 E-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 Business to Remain											Service Volume
	Marine Business Volume	Percent of Business to Remain	Total Marine Business Volume With 3' Drafts	Construction Volume	Transportation Volume	Retail Trade Volume	Used Boat Sales Volume	Manufacturing Volume	Wholesale Trade Volume	Finance Volume		
Boat Dealers	\$4,277,822	50.00%	\$2,138,911	\$0	\$0	\$1,604,183	\$213,891	\$0	\$0	\$106,946	\$213,891	
Yacht Brokers	\$2,369,462	45.13%	\$1,069,447	\$0	\$0	\$452,744	\$356,463	\$0	\$0	\$28,517	\$231,722	
Marinas	\$16,904,443	27.60%	\$4,665,344	\$0	\$0	\$2,145,357	\$102,100	\$0	\$13,905	\$0	\$2,403,982	
Canvas Products/Upholstery	\$2,336,856	74.30%	\$1,736,381	\$0	\$0	\$146,581	\$0	\$234,319	\$0	\$0	\$1,355,480	
Boat Repairs	\$6,191,184	24.94%	\$1,543,903	\$0	\$0	\$218,585	\$0	\$101,195	\$101,195	\$0	\$1,122,924	
Marine Equipment/Electronics	\$8,749,729	15.59%	\$1,363,928	\$0	\$0	\$886,553	\$0	\$0	\$0	\$0	\$477,375	
Marine Construction	\$12,282,848	73.95%	\$9,082,889	\$8,956,122	\$0	\$126,766	\$0	\$0	\$0	\$0	\$0	
Tackle/Dive Equipment	\$1,454,678	47.00%	\$683,699	\$0	\$0	\$683,697	\$0	\$0	\$0	\$0	\$0	
Marine/Sporting Goods Retail	\$7,915,954	71.84%	\$5,686,648	\$0	\$0	\$4,252,315	\$0	\$0	\$1,434,333	\$0	\$0	
Wholesaler	\$1,903,118	56.66%	\$1,078,309	\$0	\$0	\$192,036	\$0	\$0	\$886,273	\$0	\$0	
Boat Manufacturer	\$45,333,724	0.50%	\$225,541	\$0	\$0	\$0	\$0	\$225,541	\$0	\$0	\$0	
Engineering/Surveyors	\$380,251	50.00%	\$190,125	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$190,125	
Business/Personal Services	\$3,152,919	10.00%	\$315,292	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$315,292	
Storage	\$39,143	66.00%	\$25,835	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$25,835	
Boating Services	\$2,406,584	18.22%	\$438,388	\$0	\$121,736	\$30,189	\$0	\$0	\$25,908	\$0	\$260,553	
Auto/Cycle Dealers	\$2,795,962	50.00%	\$1,397,981	\$0	\$0	\$838,789	\$0	\$0	\$0	\$279,596	\$279,596	
Auto Repair	\$482,869	100.00%	\$482,869	\$0	\$0	\$383,146	\$0	\$0	\$0	\$0	\$94,475	
Camp/Resort/Lodging	\$285,188	98.00%	\$279,484	\$0	\$0	\$23,587	\$0	\$0	\$0	\$0	\$55,897	
Miscellaneous Retail/Other	\$63,934	100.00%	\$63,934	\$0	\$0	\$41,557	\$0	\$0	\$0	\$0	\$22,377	
Marine Construction	\$2,937,091	3.38%	\$99,230	\$0	\$0	\$23,215	\$0	\$0	\$0	\$0	\$76,013	
<b>Total</b>	<b>\$122,263,760</b>	<b>26.64%</b>	<b>\$32,568,137</b>	<b>\$8,956,122</b>	<b>\$121,736</b>	<b>\$12,249,300</b>	<b>\$672,454</b>	<b>\$561,055</b>	<b>\$2,466,863</b>	<b>\$415,059</b>	<b>\$7,125,537</b>	

As can be seen from Table E-9, only 26.6 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 \$32.6 million if vessel drafts were reduced to three feet MLW, a reduction of \$89.6 million from the \$122.2 million in current business activity.

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

Assuming vessel draft restrictions of three feet MLW on the Waterways, the \$32.6 million of marine-related business revenue in St. Johns County would be expected to generate total benefits of \$43.5 million in business volume (sales), \$10.7 million in personal income (wages), and 307 jobs (Table E-10). State and local tax revenues are estimated at \$1.8 million. The \$43.5 million in business volume expected to be generated by marine-related business includes a total direct benefit of \$34.0 million and combined indirect and induced benefits of \$9.5 million. The \$10.7 million in personal income includes a direct benefit of \$7.6 million and combined indirect and induced benefits of \$3.1 million. The 299 jobs generated by marine-related businesses include 223 direct jobs, 39 indirect jobs, and 36 induced jobs. State and local tax revenues are estimated to be distributed as \$1.2 million generated by direct activities, \$0.27 million generated by indirect activities, and \$0.34 million generated by induced activities.

**Table E-10. Summary of Economic Benefits of Marine-Related Businesses in St. Johns 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	9.29	2.13	1.82	13.23	3.11	0.79	0.54	4.44	70	16	15	101
Manufacturing	0.58	0.12	0.08	0.77	0.12	0.04	0.02	0.19	3	1	1	5
Transportation	0.13	0.03	0.01	0.17	0.02	0.01	0.00	0.04	0	0	0	1
Wholesale Trade	2.59	0.16	0.17	2.92	0.31	0.05	0.05	0.41	13	1	1	15
Retail Trade	13.58	0.98	1.08	15.65	2.00	0.32	0.32	2.65	84	7	9	100
Finance	0.43	0.10	0.10	0.62	0.17	0.04	0.03	0.23	3	1	1	4
Services	7.36	1.60	1.13	10.10	1.89	0.55	0.34	2.78	50	13	9	73
<b>Total</b>	<b>33.95</b>	<b>5.12</b>	<b>4.39</b>	<b>43.46</b>	<b>7.62</b>	<b>1.80</b>	<b>1.31</b>	<b>10.74</b>	<b>223</b>	<b>39</b>	<b>36</b>	<b>299</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 \$122.2 million, a decrease in personal income of \$27.0 million, a decrease of 712 jobs, and a decrease of \$4.3 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 St. Johns County and the distribution of registered vessels by size. The current sales of non-marine-related items to recreational boaters were estimated at \$11.8 million (\$7.9 million for gasoline sales and \$3.9 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 \$9.7 million (including \$6.5 million for gasoline sales and \$3.1 million in food, drink, and ice sales), a reduction of \$2.1 million from existing conditions.

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

As illustrated in Table E-11, the expected \$9.7 million in retail sales of gas, food, drinks, and ice to recreational boaters from businesses not located on the Waterways would generate benefits of \$12.6 million in business volume, nearly \$3.0 million in personal income, 65 jobs, and \$1.4 million in tax revenues. Compared to existing conditions, this is a reduction of about \$20.2 million in business volume, \$5.4 million in personal income, 108 jobs, and \$1.2 million in tax revenues. Tax revenues generated under this scenario include \$0.7 million in fuel taxes distributed as \$0.39 million in state levied taxes and \$0.3 million in locally levied taxes.

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

Activity	Economic Impacts			
	Direct	Indirect	Induced	Total
Business Volume (Millions)	\$9.64	\$1.69	\$1.22	<b>\$12.55</b>
Personal Income (Millions)	\$2.10	\$0.53	\$0.36	<b>\$2.99</b>
Employment	44	10	10	<b>65</b>
Tax Revenues (Millions)	\$1.17	\$0.08	\$0.10	<b>\$1.35</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 E-12. The combined benefits include \$56.0 million in business volume, \$13.7 million in personal income, 364 jobs, and \$3.2 million in tax revenues. The \$3.2 million in state and local tax revenues includes \$0.7 million in fuel taxes generated by gasoline sales to boaters. These benefits are a reduction of \$124.9 million in business volume, \$27.6 million in personal income, 726 jobs, and \$4.6 million in tax revenues compared to existing conditions on the Waterways and account for 60 to 70 percent of the existing benefits of the Waterways.

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

Activity	Total Economic Impacts			
	Direct	Indirect	Induced	Total
Business Volume (Millions)	\$43.59	\$6.81	\$5.61	<b>\$56.01</b>
Personal Income (Millions)	\$9.72	\$2.33	\$1.67	<b>\$13.73</b>
Employment	267	50	47	<b>364</b>
Tax Revenues (Millions)	\$2.36	\$0.36	\$0.44	<b>\$3.16</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 St. Johns County to 12 feet MLW. This increase in draft allowance would permit deeper draft vessels to fully utilize the Waterways in St. Johns 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 12 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 12-foot draft restrictions (as calculated from the survey-adjusted database of marine-related businesses) at \$143.5 million. Total business volume assuming 12-foot draft restrictions was updated to current values by applying the expected percent increase in business sales, by business type, under the 12-foot draft scenario (as obtained from the original analysis) to the updated current total business volume as presented in Table E-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 E-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 12 feet MLW on the Waterways (as presented in the original analysis), the resulting total business volume assuming 12-foot vessel drafts, and the business volume assuming 12-foot vessel drafts distributed by business activity.

As can be seen from the table, business activity would be expected to increase by 9.4 percent if vessel drafts were increased to 12 feet MLW. Total marine-related business revenue is expected to be \$133.7 million, an increase of \$11.5 million from the \$122.2 million in existing business activity.

### **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 12 feet MLW, marine-related businesses in the county would be expected to generate a total of \$181.4 million in business volume, \$42.1 million in personal income, and 1,135 jobs (Table E-14). State and local tax revenues were estimated at \$6.9 million. The sales expected to be generated by marine-related businesses under this scenario include a direct benefit of \$138.7 million and combined indirect and induced benefits of \$42.7 million. The total personal income generated under this maintenance scenario includes a direct benefit of \$28.2 million and combined indirect and induced benefits of \$13.9 million. Total employment benefits include 796 direct jobs, 195 indirect jobs, and 143 induced jobs. The \$6.9 million in state and local tax

**Table E-13. Total Marine-Related Business Revenue by Business Type, Distributed by Business Activity, Assuming 12-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 Volume	Wholesale Trade Volume	Finance Volume	Service Volume
Boat Dealers	\$4,277,822	11.00%	\$4,748,382	\$0	\$0	\$3,561,286	\$474,838	\$0	\$0	\$237,419	\$474,838
Yacht Brokers	\$2,369,462	13.72%	\$2,694,466	\$0	\$0	\$997,453	\$1,108,748	\$0	\$0	\$88,702	\$499,563
Marinas	\$16,904,443	15.28%	\$19,487,138	\$0	\$0	\$6,801,543	\$335,075	\$0	\$184,982	\$0	\$12,165,537
Canvas Products/Upholstery	\$2,336,856	4.75%	\$2,447,866	\$0	\$0	\$289,949	\$0	\$541,785	\$0	\$0	\$1,616,132
Boat Repairs	\$6,191,184	18.92%	\$7,362,584	\$0	\$0	\$569,564	\$0	\$251,780	\$251,780	\$0	\$6,289,475
Marine Equipment/Electronics	\$8,749,729	19.41%	\$10,448,206	\$0	\$0	\$6,791,333	\$0	\$0	\$0	\$0	\$3,656,873
Marine Construction	\$12,282,848	23.87%	\$15,214,771	\$15,012,329	\$0	\$0	\$202,438	\$0	\$0	\$0	\$0
Tackle/Dive Equipment	\$1,454,678	0.00%	\$1,454,678	\$0	\$0	\$1,454,678	\$0	\$0	\$0	\$0	\$0
Marine/Sporting Goods Retail	\$7,915,954	5.10%	\$8,319,776	\$0	\$0	\$6,332,478	\$0	\$0	\$1,987,301	\$0	\$0
Wholesaler	\$1,903,118	11.57%	\$2,123,347	\$0	\$0	\$460,322	\$0	\$0	\$1,663,024	\$0	\$0
Boat Manufacturer	\$45,333,724	0.00%	\$45,333,724	\$0	\$0	\$0	\$0	\$45,333,724	\$0	\$0	\$0
Engineering/Surveyors	\$380,251	5.00%	\$399,263	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$399,263
Business/Personal Services	\$3,152,919	0.00%	\$3,152,919	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,152,919
Storage	\$39,143	0.00%	\$39,143	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$39,143
Boating Services	\$2,406,584	18.44%	\$2,850,370	\$0	\$267,432	\$328,207	\$0	\$0	\$289,619	\$0	\$1,965,112
Auto/Cycle Dealers	\$2,795,962	40.00%	\$3,914,346	\$0	\$0	\$2,348,608	\$0	\$0	\$0	\$782,869	\$782,869
Auto Repair	\$482,869	0.00%	\$482,869	\$0	\$0	\$383,146	\$0	\$0	\$5,248	\$0	\$94,475
Camp/Resort/Lodging	\$285,188	0.00%	\$285,188	\$0	\$0	\$228,150	\$0	\$0	\$0	\$0	\$57,038
Miscellaneous Retail/Other	\$63,934	0.00%	\$63,934	\$0	\$0	\$41,557	\$0	\$0	\$0	\$0	\$22,377
Charter Boats/Rentals	\$2,937,091	0.00%	\$2,937,091	\$0	\$0	\$948,628	\$0	\$0	\$0	\$0	\$1,988,464
<b>Total</b>	<b>\$122,263,760</b>	<b>9.40%</b>	<b>\$133,760,063</b>	<b>\$15,012,329</b>	<b>\$267,432</b>	<b>\$31,739,343</b>	<b>\$1,918,662</b>	<b>\$46,127,289</b>	<b>\$4,381,953</b>	<b>\$1,108,990</b>	<b>\$33,204,079</b>

revenues includes \$4 million generated by direct benefits, \$1.6 million generated by indirect benefits, and \$1.4 million generated by induced benefits.

**Table E-14. Summary of Economic Benefits of Marine-Related Businesses in St. Johns County, Assuming Vessel Draft Restrictions of 12 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	15.57	3.57	3.09	22.23	5.32	1.33	0.92	7.57	118	27	26	170
Manufacturing	47.48	10.75	5.55	63.78	8.26	3.66	1.66	13.59	197	80	46	323
Transportation	0.28	0.06	0.03	0.37	0.05	0.02	0.01	0.08	0	1	0	1
Wholesale Trade	4.61	0.26	0.28	5.14	0.51	0.09	0.08	0.68	19	2	2	23
Retail Trade	35.37	2.60	2.83	40.81	5.24	0.85	0.85	6.93	232	19	24	275
Finance	1.14	0.26	0.26	1.66	0.45	0.10	0.08	0.63	7	2	2	11
Services	34.29	7.98	5.15	47.42	8.34	2.72	1.54	12.59	224	65	43	331
<b>Total</b>	<b>138.73</b>	<b>25.48</b>	<b>17.19</b>	<b>181.40</b>	<b>28.17</b>	<b>8.77</b>	<b>5.13</b>	<b>42.06</b>	<b>796</b>	<b>195</b>	<b>143</b>	<b>1,135</b>

Comparing current total economic benefits to expected benefits assuming a higher state of maintenance reveals that the county would realize an increase of \$15.8 million in business volume, \$4.4 million in personal income, 123 jobs, and \$0.8 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 \$15.3 million in business volume, \$3.6 million in personal income, and 79 jobs (Table E-15). The \$1.6 million in tax revenues generated under this scenario includes \$0.83 million in fuel taxes distributed as \$0.47 million in state levied taxes and \$0.37 million in locally levied taxes.

**Table E-15. Summary of Economic Benefits of Non-Marine-Related Items Purchased by Boaters in St. Johns County, Assuming Vessel Draft Restrictions of 12 Feet**

Activity	Economic Impacts			
	Direct	Indirect	Induced	Total
Business Volume (Millions)	\$11.75	\$2.04	\$1.48	<b>\$15.27</b>
Personal Income (Millions)	\$2.55	\$0.64	\$0.44	<b>\$3.63</b>
Employment	54	13	12	<b>79</b>
Tax Revenues (Millions)	\$1.41	\$0.10	\$0.12	<b>\$1.63</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 E-16. Combined benefits include \$196.7 million in business volume, \$45.7 million in personal income, 1,213 jobs, and \$8.5 million in tax revenues. State and local tax revenues include \$0.83 million in fuel taxes generated by gasoline sales to boaters. These benefits are an increase of \$15.8 million in business volume, \$4.4 million in personal income, 123 jobs, and \$0.8 million in tax revenues compared to current existing conditions on the Waterways.

**Table E-16. Summary of Total Economic Benefits of the Waterways in St. Johns County, Assuming Vessel Draft Restrictions of 12 Feet**

Activity	Total Economic Impacts			
	Direct	Indirect	Induced	Total
Business Volume (Millions)	\$150.48	\$27.51	\$18.68	<b>\$196.67</b>
Personal Income (Millions)	\$30.71	\$9.40	\$5.57	<b>\$45.69</b>
Employment	850	208	155	<b>1,213</b>
Tax Revenues (Millions)	\$5.36	\$1.68	\$1.46	<b>\$8.50</b>

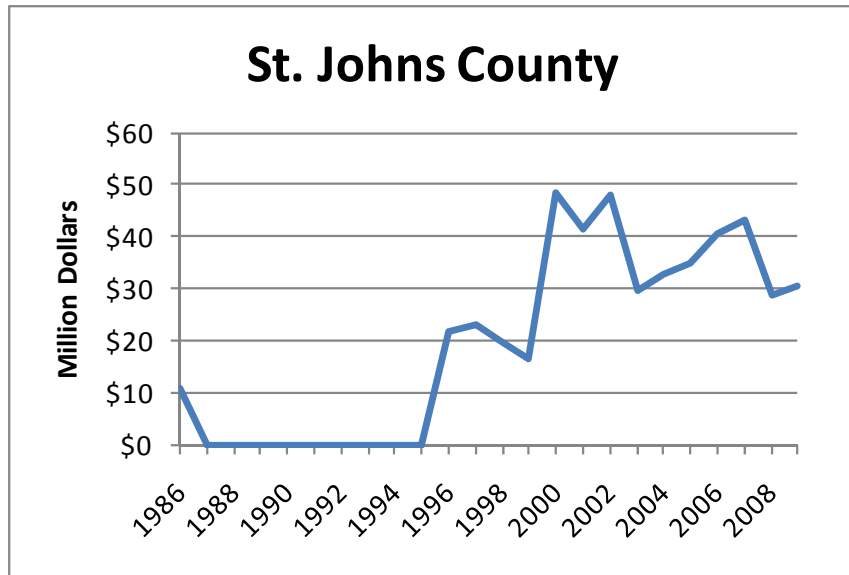
The combined business volume generated from the Waterways assuming 12-foot vessel draft restrictions includes a direct benefit of \$150.5 million, an indirect benefit of \$27.5 million, and an induced benefit of \$18.7 million. Combined personal income generated under this scenario consists of \$30.7 million in direct benefits, \$9.4 million in indirect benefits, and \$5.6 million in induced benefits. Combined employment includes 850 direct jobs, 208 indirect

jobs, and 155 induced jobs. State and local tax revenues include \$5.4 million generated by direct activities, \$1.7 million generated by indirect activities, and \$1.5 million generated by induced activities. The \$5.4 million in tax revenues generated by direct activity includes \$0.83 million in fuel taxes.

### **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. The methodology developed for this analysis for estimating the impact of the recession on marine-related businesses in an individual county within the District was based on estimating the trend in gross sales of Kind Code 28 established over the 20-year period prior to the onset of the recession. This trend in gross sales was used as a proxy to estimate the theoretical gross sales in a 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. However, anomalies in the FDOR reported gross sales data for St. Johns County prevented the development of an estimate of the recession.

Figure E-1 graphically illustrates the reported gross sales for Kind Code 28 available for St. Johns County from 1986 through 2009. The FDOR reported gross sales for Kind Code 28 were not available for the years from 1987 through 1995, and the gross sales reported for 1996 through 2009 fluctuated widely between \$16.3 million to \$48.5 million per year. The trend line of the gross sales from 1996 to 2009, based on polynomial equation, had an  $R^2$  value of 0.42. The closer the  $R^2$  value is to 1, the higher the correlation of the equation, or regression line, is to the data. An  $R^2$  value of 0.42 indicates that for St. Johns County, the equation did not correlate, or approximate, the historical gross sales values, and therefore would not generate a reliable estimate of gross sales in the out years (2009). Therefore, a reliable estimate of the recession on St. Johns County could not be developed.



**Figure E-1. St. Johns County, FDOR Reported Gross Sales of Kind Code 28, 1986 Through 2009**