



Economic Impact of Mining on Levy County, Florida A Strategic View



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A Strategic View

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Harvesting timber,
Gulf Hammock,
May 2009

Economic Impact of Mining on Levy County, Florida: A Strategic View

“Over there we’ll have a bird sanctuary and back there, a wildlife preserve...”

“All the fish you want...for free...”

“Follow that Dream,” Elvis Presley, 1962.

Filmed in Yankeetown, Inglis, Levy and Citrus Counties

Executive Summary

This Progress Report contains two sections: Section I describes the economy of Levy County, its resources, and strategic advantages. Section II measures the economic impact of introducing a mining operation into Gulf Hammock, near Yankeetown and Inglis. Included is a discussion of the demand and existing supply of limerock in the region. This section also discusses the economic alternatives facing the County and suggests other economic strategies for job creation.



King Road Mine,
Test Quarry Pit,
May 2009



Crystal River
Nuclear Plant with
Limestone Mine in
background, May
2009

The Economy of Levy County and its Strategic Advantages

Part I: Its Special Nature

The economy of Levy County is generally thought of as (1) low income, (2) small in population and purchasing power, and (3) rural. A comparison of Levy with its regional neighbors and with the State's overall performance will highlight the special nature of this county and its strong strategic economic advantages. Levy will be compared with its neighboring counties: with Marion and Citrus as Workforce Development Region 10; with Citrus and Dixie as "the Nature Coast;" with Dixie and Gilchrist as Pure Water Wilderness, and with Alachua (Gainesville) as the chief out-of-County workplace destination.¹

First, Levy's low income, as measured by low per capita income, low earnings per job, and low median household income (Table 1.1, lines 1,2, and 4), all place the county at about two-thirds the State average for each measure (col. 3) and rank Levy in the poorest third of all the counties (col. 4). Nevertheless, neighboring Dixie County ranks lower in all these measures, and Gilchrist has lower earnings per job.

Levy ranks 44 smallest in population, but Dixie and Gilchrist have even smaller populations. Levy ranks 55 in density with 36 people per square mile, but Dixie is a third less dense with 22 people per square mile. The Florida average is 346, almost ten times Levy's density, yet a third greater than Marion (206) and Citrus (240).²

The special features of the County's economic health lie in the relatively high share of its earnings that come from ownership ("proprietors' income") (Table 1.1, line 3b), where Levy

¹ See US Census 2000, "Commuting to Counties, Living in Levy County." 54% of all respondents live and work in Levy, 24% in Alachua, and 9% in Marion. On the incoming side, 73% of those that work in Levy, also live there, whereas 8% live in Alachua, 6% in Gilchrist, and 6% in Dixie.

"Rural" is defined by the US as places not more than 50,000 people. None of Levy's 8 incorporated towns is more than 3,000, and nearly 30,000 of the County's 40,000 people live in Unincorporated areas. (FL Stat. A lot – fsa – 2008, t. 1.25).

² Data from BEBR, FL County Rankings, 2008

ranks 11th in the state, and in its stable unemployment rate (line 7, a & b). Even during the national economy's meltdown, Levy maintained an unemployment rate only slightly higher than the State average, (4.3% in 2007 and 11.5% in Sept. 2009), ranking 25 and 29, respectively.

The State's "relative wage index," (Florida County, Wage Index, FCWI) and the State "relative price index" (FCRPI) reveal some extraordinary qualities to this "poor, small, rural" county. First, the FCWI indicates (line 8) that a person is willing to accept \$94.19 for the exact same job that is paid \$100 on the average in the State. This is one measure of "amenity value" of living in the County which "compensates" for the missing \$5.81, and is partly a measure of the quality of life in the County, due to superior air quality, lower population density, the natural surroundings, lower crime rate, in short, "the attractiveness of an area NOT explained by economic features."³

In addition, prices, especially housing costs, are lower (food and medical are higher), as indicated by the overall Florida County Relative Price Index, (FCRPI, line 9), which measures the cost of an identical basket of goods and services in Levy, which is \$89.06 vs. \$100.00 for the State average.

The combination of the "amenity wage" and the lower price index puts the total Comprehensive Amenity Index at 83.89, meaning that \$84 in Levy is the equivalent of \$100 in Florida, and gives the County a 19% premium over the State average (line 10, col. 5).⁴

All this suggests that the "low income" caricature of Levy County is an artificial statistic which is actually compensated by amenities and low prices. But there **is** real poverty in Levy County, especially among children and the elderly. This problem must be addressed, not by

³ REMI Manual, Regional Economic Models, Inc, Model Documentation, (1997) Vol. I, p.4-40.

⁴ The nearby Counties also demonstrate similar amenities. Of the 4 neighbors, only Dixie has a lower relative wage index. (Marian, Citrus, Gilchrist are almost identical), and Marion and Citrus have high price indices; Gilchrist and Dixie have measurably lower prices than Levy.

generalized “job creation” or by promoting special projects that create only a few jobs, but by specially targeted state and federal anti-poverty programs.

The true character and strength of Levy County lies in its diversified and stable social structure, rooted in the land, its resources, and its people. The economic profile of the county (Table 1.2, line 1-5), highlights these features. Levy County has 7.2% of its work force in forest and fishing and ranks 12th in the state. It ranks 9th in construction with 14.3%, 13th in manufacturing, 8th in retail trade,⁵ and 35th in accommodations (i.e. hotels, motels).

The newly-released 2006 Agricultural Census also highlights the nature of Levy County relative to the state. First, the average of Levy’s thousand farms are 88% the size (Table 1.2, line B.1), 92% the market value (line 2-3) of land and machinery, but 45% the market value of produce (line 4) of the statewide average. This last-mentioned disparity may be due to the concentration of Levy farms on livestock (40% in Levy vs. 20% in the State) rather than crops (60 % in Levy vs. 80% in FL, lines 4b & c).

The net cash income per farm in Levy is thus 57% and farm expenses are 49% the State averages (line 5, 6). Levy ranks third among the counties in peanut production (line 7).

The land pattern in Levy is different from the state average. Levy has a greater share (42%) in cropland than the State (32%) and a lesser share in permanent pasture (30%) than the State (35%, lines C.2). From 2002 to 2007, Levy suffered a loss of only 3.3% farmland (6,000 acres) in contrast to the 11.4% loss for the State.⁶

In terms of natural resources, Levy is a premier timber and fishing/agricultural county. It ranks third among counties in quantity (millions of cubic feet, MCF) of forest products; first in veneer logs, 5th in saw logs, and 14th in pulpwood (Table 1.2 lines E.1a-c). Levy ranks 6th in timberland acreage (line E.2); 16th in number of fishing trips (line E.3); 26th in weight of fish and

⁵ Indicating a tourist destination and spending by visitors and transients, employing 20.7% of Levy’s workforce.

⁶ And in contrast to even greater losses in counties like Indian River (18% or 34,000 acres), St Lucie (31% or 68,000 acres), and Martin (37% or 76,800 acres). See US Ag Census 2007.

shellfish landings (line E.4), and 13th in weight of shellfish landings (line E.5). In dollar terms, Levy ranks 2nd in value of aquaculture.

Although perceived as a low-income area, Levy County is actually rich in resources, holds its own in terms of employment, and benefits from an amenity premium of almost one fifth above the State average.

It is also ironic that in the general economic collapse of the past two years, Levy has lost a thousand jobs, excluding the self-employed. (See Table 1.3, top line.⁷), but the bulk of this decline has been in the goods-producing sections – mostly in construction and manufacturing. Net positive gains have been made in three categories of services:

- (1) Professional and business;
- (2) Education and health;
- (3) Leisure and hospitality.

These then are the leading sectors. These are the sectors that have been growing while the rest of the economy has gone into decline. Together with agriculture, these are the sectors that must be promoted to create jobs, income, and prosperity.



Spring Run

⁷ This refers to ES202, Quarterly Census of Employment and Wages, see Notes to Table. Agriculture and self-employed business owner/workers are excluded.

Economic Impact of Mining on Levy County, Florida:

Part II: The Mining Project

A. The Proposal

Into this setting – where recreation, environment, soil, forest, water, air, and tranquility are the County’s beacons – comes the proposal for a mammoth rectangular 4,000 + acre limestone mine in the south of Gulf Hammock, to be mitigated by roughly 4,000 acres adjacent to the Waccassassa Bay State Preserve.⁸

The little that is known of the exact dimensions and scale of the mining project is gleaned from Tarmac’s press releases and from various state and federal permit applications. The proposed Kings Road mine is not unlike the Tarmac mine in the Miami-Dade Lake Belt, which produces 8 million tons per year⁹ and supports a number of large-scale “downstream” industrial activities, such as cement-making and concrete-block manufacturing.

Tarmac had leased the land from the timber company for a flat \$10 fee (stipulated in the lease),¹⁰ making the timber company – incorporated as a REIT (Real Estate Investment Trust) -- a co-partner in the mining operation. Land costs, therefore, are negligible, and existing roads already connect the mining area to the state network. The dredge is on site, ready to be assembled and start digging. The estimated cost per ton ranges from less than \$1 to \$3 per ton, depending on yield and quality.¹¹ With selling prices close to \$10 per ton, net revenue of \$7 per

⁸ The mitigation tract borders on Waccassassa Bay Preserve State Park, which has already been seriously affected by sea level rise. See the two articles by Castaneda and Putz (2007) and by DeSantis et al (2007). See the US Army Corps directive (July 2009) to “Consider Sea-Level Changes in Civil Works Programs.”

⁹ See Lampl-Herbert, “Strategic Aggregate Study,” Table 3, for tonnage. The Tarmac Pennsuco mine in Miami-Dade is permitted by the SFWMD No. 13-00004 for 12.10 MGD but used 4.4 MGD in 2000.

¹⁰ On file at the SFWMD permit application.

¹¹ For the higher estimate, see Lampl-Herbert Consultants, “Asset Evaluation” Dade-Collier Training and Transition Airport Property,” July 21, 2009, prepared for Miami-Dade Aviation Dept. Journalist Alan Farago quotes a lower figure in <http://www.counterpunch.com/farago12212009.html>, in “Turning Wetlands Into Rock Mines Destroying the Everglades at 25 Cents Per Ton.”

ton¹² is ready to be made on the 400 truck trips x 20 tons x 300 days = 2.4 million tons or \$16.8 million net profit per year. Under full production, this project, in effect, converts pinelands and wetlands into a cash cow producing processed and graded lime rock for roadbeds and fill.

What is the future market destination for the rock? Tarmac indicates the market is to be a 100-mile driving radius around the mine. However, in this area, there are already 93 abandoned mines and 48 operating mines, according to government statistics,¹³ and even these are working at a fraction of their capacity. In the Miami-Dade Lake Belt, Tarmac has begun exporting cement through Broward County's Port Everglades to Panama to keep that mine and plant operating.¹⁴

On January 21, 2010, several new factors have come into play. First, the Eleventh Circuit Court of the U.S. Court of Appeals upheld Miami's federal district Judge Hoeveler's summary judgment ruling in favor of the Sierra Club (and the Natural Resources Defense Council) over the U.S. Army Corps (and the U.S. Fish & Wildlife Service & 8 other intervenors). The Court upheld the vacating of the mining permits on the grounds that alternatives had not been properly explored and dismissed the industry's challenge to the Judge's meticulous examination of the scientific and economic evidence.¹⁵

But on Jan. 29, 2010, the U.S. Army Corps, Jacksonville Office, issued new mining permits to CEMEX for a total of 10,000 acres, based on the finding in Memorandum For Record that the mining discharges near Miami-Dade public water supply are "not contrary to the public interest."¹⁶

¹² Lampl-Herbert Report, Table 3, p.41.

¹³ www.mhsa.gov database for limestone mines by FL county.

¹⁴ See Doreen Hemlock, "South Florida Firm now Exports Cement," Sun Sentinel, Dec. 11, 2009.

¹⁵ See Sierra Club vs. U.S. Army Corps, Jan. 21, 2010, No. 09-10877, D.C. Docket No. 03-23427--*WMH* U.S. Court of Appeals, 11th Circuit. Tarmac LLC is one of the intervenors on the side of the US Army Corps.

¹⁶ See CESAJ-RD-SP (1145b), SAJ-2000-02373 (IP-LAO), Memorandum for Record, January 29, 2010, posted at http://www.lakebeltseis.com/CEMEX_ROD.pdf, http://www.lakebeltseis.com/Lake_Belt_Regional_ROD_part_1.pdf, and http://www.lakebeltseis.com/Lakebelt_News_Release.pdf for the Press Release.

The Court's ruling also vindicated Judge Hoeveler's year-long review of the economic importance of the South Florida mining industry, and a new report, issued in Sept. 2009, on Florida's Aggregate Industry¹⁷ presented a very different picture from the earlier 2007 consultant's report on Florida's Strategic Aggregate Industry.¹⁸ The earlier report stressed the shortage of rock and the dire need to open new sources within the state quickly. The more recent report, on the contrary, expects "another 5-6 years of below average growth, and pre-boom levels cannot be expected for at least 10 years." Given the magnitude of the decline in demand, existing mines, the report writes, may be doubling their life-time. Rail cars are in surplus; the capacity of the ports to handle aggregate imports has been steadily increasing, and imports of granite aggregate has grown in all the districts of the state except in the southeastern counties served by the Lake Belt.

These findings are also corroborated by a more recent source: the U.S. Census tracking of imports and exports of aggregate and cement by port (Table 2.1A & B). The increase in imports through the north-central harbors – JAX, Pt. Canaveral (serving Orlando), and Tampa – are especially notable, as this is the same market that the Levy County mine would also serve. Florida imports of aggregate doubled from 2003 to the period 2006 - 2008, but fell dramatically from 2008 to 2009 (through Dec., both years). Imports of white and non-white Portland cement peaked in 2006 and had fallen to a fraction by the end of 2009. For the first time, Florida exported aggregate in 2007, but these too fell from 73,000 MT in 2007 to 23,000 MT in 2009, while exports of cement doubled to a total of 100,000 MT in 2009. All this is consistent with a surplus of production in Florida mines and a need to find markets abroad to pay the fixed costs of mining and of cement manufacturing.

The biggest major project in the Levy County area is the LNP, Levy Nuclear Plant, sited just across the road (US 19) adjacent to the south tip of Goethe State Forest. Here rock will be

¹⁷ See State Materials Office (Sept. 2009).

¹⁸ See Lampl-Herbert Consultants (2007).

needed in great quantity to raise a 230 acre “platform”-like campus for the facility out of the hammock wetland and also for the 60-ft deep foundation beneath the reactor itself.¹⁹

Other than the LNP, the proposed Suncoast Parkway extension is no longer on the table.²⁰ There are still three other functioning mines in the immediate area which could supply the needs of the LNP. It should be noted that Florida Rock’s Gulf Hammock mine closed in 2008 after 29 years of operation (1979-2008) due to declining markets and technical reasons regarding the quality of rock.

Nevertheless, Tarmac indicates that in addition to the 35 “direct” mining, 200 jobs in additional industries will be created in the county. This may refer to the truckers needed to haul 400 loads a day of rock. But if the mine does supply the LNP, the logical transfer mode would be by conveyor belt running beneath a raised highway, similar to the Tarmac operation in Miami-Dade, which carries rock under the Florida Turnpike to its cement plant outside the quarry area. New jobs might be realized in a concrete block or pipe factory, again, similar to the industrial complex in the Miami-Dade Lake Belt, or in new construction resulting from having a source of extremely cheap rock that can be used to fill marshy timberland into habitat for the 3,000 worker lodgings needed for the LNP construction and for vacation homes and resorts once the LNP “boom” is over. While no mention is made of any of this in the Tarmac proposal, there are strong, positive financial incentives driving the companies involved – Tarmac coupled with Plum Creek -- to “develop” the region.

Is there any need for a new large mine in the region and in Gulf Hammock if existing mines and imports can surely meet the regional demand for the foreseeable future? Since the research on existing mines and their partial closure due to falling demand clearly shows no pressing need, then the county’s own interest must be carefully evaluated to balance the “legacy”

¹⁹ LNP, Units 1 & 2, COL Application, Part 2 & NRC, Interveners Petition, Feb. 6, 2009, July 8, 2009.

²⁰ Team Levy Meetings, May 2009.

²¹ of good will built up by the mining company in the county against the true interest in the county's future.

The IMPLAN Model of an “average” rock mine that employs 35 workers (Table 2.2, cols. 1-4) results in sales valued at \$6.3 million (line 8, col. 1) plus “downstream” purchases of materials and fuel of another \$960 thousand (line 8, col. 2), called “indirect impacts.” The mining workers’ spending of their wages, called “induced impacts” (col. 3), generates another \$831 thousand, resulting in a “total” impact of direct, indirect, and induced effects of some 52 jobs, \$8.1 million of sales (lines 7-8, col. 4), and government taxes totaling \$991,000 (line 15, col. 3).

Is this a good deal for the county? The application of the IMPLAN model to other industries gives an interesting result: When the same volume of commerce, that is, \$6.3 million, is spent on hunting and fishing activities, the Model shows that almost three times the number of direct jobs – that is, 89 direct jobs vs. 35 for mining – and twice the number of total jobs (112 vs. 52 for mining). Furthermore, the sum of all taxes (lines 9-15, cols. 3 & 7) generated by the hunting and fishing model is twice that of the mining model.

Why is this? The economics is very straight forward. Mining is a machine-intensive industry, requiring great use of capital, energy, and relatively steady and well-paid labor, while the recreation and sports “industry” reflects purchases of food, lodging, gasoline, specialized but lightweight equipment (guns, fishing rods, ammunition, etc.), and government licenses and permits, paid for the most part in the region. The mine, on the other hand, is a foreign-owned, centrally-operated branch plant, while recreation is a decentralized, highly-personalized set of individual behaviors and spending, competing for the same space as the mine.

²¹ See the full narrative diary of the federal trial, posted on the [Newscaster](http://www.thenewscaster.com/trial.html) website, <http://www.thenewscaster.com/trial.html>. Compare the intended legacy to the actual record of Tarmac in Levy County, presented in <http://www.kingroadmine.com/comminvol.html>, which lists Tarmac's contributions to 28 different school and sports programs, charities, civic associations, chambers of commerce, sports events and regional festivals, all without having earned a single dollar in the county!

But there is much more at stake because a mine that “might be” also carries with it the threat of jeopardizing and **competing out of existence** a number of economic activities in the region. The opening of a large-scale mine in Gulf Hammock could actually result in a net loss of jobs as the resources in the Hammock degenerate, hunting is closed off, water quality becomes compromised, and aquaculture and tourism in Cedar Key are threatened.

The attached Google map of the Levy County area has 5-mile (in red) and 10-mile contours (yellow) distance from the proposed mine. Table 3.1 lists the outdoor recreation facilities in Levy County (col. 1) and the extent to which those facilities fall within the 10-mile radius (col. 2) and which be damaged by the effect of an extreme weather event on the mine or underground leakage from the mine.²² The high numbers and percentages of the facilities that could possibly be affected by the mine (Table 3.1, cols. 2-3) suggest that there is extensive exposure to risk on the part of an overwhelming majority of the recreational water and land area, and to hunting, hiking, and salt-water fishing. (Table 3.2 lists the major Federal, state, local government and non-governmental recreation facilities. However, many smaller, private facilities and camps do not appear in the FDEP Outdoor Recreation Inventory.

Quantifiable Effects: Summary Table 4.1

The economic effects of the mine are laid out in Table 4.1. Again, the standard procedure is to use an IMPLAN (Impact Analysis for Planning, www.IMPLAN.com) model for Levy County, as the state agencies also used IMPLAN models for evaluating the effects of timber, aquaculture, and marina and boat ramp impacts.

²² The memo from the Lead Planner of the Intergovernmental Policy and Planning Division of the South Florida Water Management District (SFWMD), dated January 6, 2010, to State’s DEP Administrator takes up this very issue with respect to the construction of the new Turkey Point Nuclear Facility and its need for a large limestone mine to provide fill for its marshy, coastal location. The models used to simulate the underground water flows (MODFLOW) need to be adjusted for specific findings of porosity, “vugs,” and cavities found in the rock. The standard “parameters” of the model need to be modified; otherwise, the conclusions about salt and freshwater mixing and seepage will not be correct. A similar caution is in order in Levy County, where even less is known about the actual rock cavities, underground conduits and vugs. And the risk to nearby and offshore ecology is as fragile as in South Florida. For stunning photographs of rock samples showing porosity differences, see Cunningham et al (2006), pp. 37-41.

A 35-employee rock mine would, in the IMPLAN model, generate \$6.3 million in sales (col. 1), \$1.9 million in labor income and \$4.0 million in valued added directly. However, once the computation is expanded to include the indirect inputs and the impact of workers' spending, then the "total" impacts are indeed higher: \$8.1 million in sales, 52 jobs created, \$2.4 million in labor income, and \$5.0 million in value added (line A.1, cols. 5-8). Government taxes total to nearly \$1 million (col. 11).

The true impacts of the mine, however, are far wider than the production and processing of limestone. First of all, there will be an eventual "loss" of 4,000 acres of timber lands (line B.2) as the mine grows. The value of the hunters' spending lost from the Hammock (line B.3) is estimated to total \$2.8 million in sales, 46.6 jobs, and \$1.1 million in labor income. The county's loss in Gulf Hammock special use fees and recreational hunting fees is estimated to be half the current take of \$296,060, or \$148,030.

The amenity value of real estate bordering the mining site is also likely to be lost to the 68 residential parcels totaling 712 acres. (See Appendix Tables A.1 and A.2 for more detailed analysis of the parcels' market value, assessed value, taxable value, and taxes paid on residential and forest parcels.) This would be a one-time loss of \$5.4 million in property value which would result in a loss of 36.7 jobs. County taxes totaling \$36 thousand on these parcels, and that too would disappear.²³

Other on-site losses are associated with increased congestion along the road ways leading to and from the mine, accidental costs, and the loss of amenities to the land along the truck routes (Table 4.1, lines 5-7), but no attempt has been made to estimate these costs.

²³ On the effects of mine blasting on homes in Miami, see the account of Michael Pizzi's group, Citizens against Blasting, in Craig Pittman, Mining Blasts Away at Glades Future, St. Petersburg Times, May 9, 2001. For the engineering of blasting on structures, see M.R. Svinkin, "Environmental Vibration" and "Drawbacks of Blast Vibration Regulations." On the impact of mining on drinking water, see I. Thompson, "Poisoned Well." Miami New Times, March 20, 2008. See finds and judgments by Judge Hoeveler, U.S. District Court, So. Dis. FL., Case 03-23427-CIV-Hoeveler, March 22, 2006; July 13, 2007; & Jan. 30, 2009.

To sum up, the total on-site economic impacts (line 8, cols. 5-8) are \$9.1 million, 92 jobs (almost twice the job creation of the mine), \$2.0 million in labor income, and \$6.2 million in value-added.

There are three further categories of impacts to be considered. First, the clam growers and processors of Cedar Key may be at risk if the Gulf waters adjacent to Gulf Hammock become polluted or change salinity, for example, as the result of a catastrophic hurricane. Seen from a broader point of view, the prospect of a catastrophic event is statistically probable given the 100 year life-time of the mine and the documented occurrence of the destructive powers of hurricanes in the area. The mine itself is within the hurricane–surge reach and evacuation zone of a category 2 and higher storm. (See Appendix E.1 Evacuation Route Map for Levy County.)

Major hurricanes themselves hit this region in 1896 (West Indian), 1950 (Easy), 1985 (Elena), 1993 (No Name Storm), 1996 (Josephina), 2004 (Frances, Sept. 4) and Jeanne (Sept. 26), crossing over or near the site. The danger lies in the probable displacement of water borne quarry pit impurities or from other mine related activities, affecting the coastal waters of the Gulf, Waccassassa Bay fishing and the aquaculture of Cedar Key.²⁴

While the Peace River and Tampa Bay disasters relate to phosphate mining and processing, the “normal” non-hurricane-related contamination of Miami-Dade’s wellfield and the Everglades restoration effort have resulted in a number of geological studies, discoveries, and innovative simulation models of the movement of water through karst rock structure. The proximity of the Tarmac mine to the Gulf and to the fishing and shellfish habitat, therefore, must be of special concern, and requests should be made to USGS to apply these scientific tools to the Gulf Hammock project.

The map entitled, “Faults and Fracture Traces” after Vernon, 1951,” submitted in the SWFWMD application file, shows major transversal (D – cuts) (I – subterranean karst fractures)

²⁴ See R.J. Verdi, “Hydrological Effects,” USGS, 2005. See J. Zink, Sept. 8, 2004, St. Pete Times on Hurricane Frances; see USGS, Peace River Cumulative Impact Study, “Catastrophic impacts have previously occurred in both the Peace and Alafia River Watersheds due to spills...”

that may act as conduits for water flows and increased transmissivity. This could result in surprisingly faster flow-rates from the mine pit to the Waccassassa Bay State Preserve and Big Bend Sea Grasses Preserve.²⁵

The total sales value of clam growers is \$44.9 million, and \$22.9 million in labor income, creating 556 jobs (Table 4.1, line 9, cols 5-8). Degenerate water quality would probably affect tourism, and those categories of spending in Cedar Key, Inglis, and Yankeetown, were run through the IMPLAN model (line 10). Total sales for five tourist categories sum to \$22.3 million, including \$7 million in labor income, generating 383 jobs and \$2.8 million in taxes (cols. 5, 6, 7, and 11).

Visitation to the three state parks in the mine's reach – Cedar Key, Scrub, and Waccassassa Bay State Preserve – could decline with catastrophic water changes, and these would result in a loss of \$9.5 million in sales (line 11, col. 5), 164 jobs, and \$3.7 million in labor income (cols. 5-7), and \$2.1 million in taxes (col. 11).

Boating and fishing in the Waccassassa Bay and the lower Withlacoochee River are also likely to be affected. A survey of the area's boats, done in early January 2010, shows 79 boats in the three local marinas, another 184 anchored at private docks, and 8 public boat ramps. Using the on-line economic impact (IMPLAN) calculator at the FWCC website, it was found that total sales amount to \$10.4 million, labor income to \$3.3 million, and 175 jobs generated, plus fishing recreational fees of \$10,590.

The total fees due to recreational licenses and the Gulf Hammock special use permit fees amount to \$248,000 (line 12.4, col. 1), with a total economic impact of \$355,000 and 2.3 jobs (cols. 5-6).

In summary, the total of "Probable Nearby Losses" are calculated to be \$88 million and

²⁵ Compare Cunningham et al (2006) and Bacchus (2006). Both papers argue for more expansive and correct evaluation of underground water flows.

1,280 jobs and a labor income of \$37 million and Levy County fees of \$172,000 (Line 13.1, cols. 5-7, 12). Thus, the grand total (line 14.1, cols. 5-6, 11-12) of ALL “On-Site” and “Nearby” Losses amount to \$96.2 million in sales, 1,371 jobs, labor income of \$39 million, total federal and local taxes of \$6.7 million, and Levy County fee losses of \$356,000 per year. Thus, the giant industrial mine in Gulf Hammock may create 35 to 52 jobs but it could also cause the loss of 1,371 jobs and alter the character of the region.

The pursuit of an industrial path would sacrifice the county’s real legacy, which is to guard its forests and wetlands, to fish and boat in its waters, to farm the land and harvest the timber, and develop a “cluster” of low-impact outdoor activities of unsurpassed variety, accessibility, and affordability. Given its amenity value, location, infrastructure, natural endowments, and historical appreciation for traditional values, the Levy County government and its constituents have a lead in developing more jobs on the basis of recreational activities rather than on “new” and especially-heavy industry, especially, whose very creation is competitive and antithetical to environmentally-sensitive recreation, hunting, and fishing.

Nevertheless, if the mine is constructed, then the question of catastrophic damages must be faced up front and in advance. How will the residents of Yankeetown and Inglis be compensated for damages caused by blasting, underground toxicity, or well-field contamination? Who will pay for the harm done to Waccassassa Bay fishing and boating, to Cedar Key clam farmers and to the tourist industry? Who, in short, will pay the costs of the probable catastrophic impacts that will occur in the next 100 years?

It has been shown that flexible assurance bonds would “shift” the costs of possible environmental damage away from both the public and private companies to the financial markets the costs of “bonding” are incorporated and built into their projects. Thus, the public is protected from the start, and the catastrophic costs are absorbed by the market and the bonding process,

with the developer paying only the annual premium of the bond as part of his normal fixed operating expenses.²⁶

At the risk of potential losses of \$96.2 million per year for 100 years, conservatively estimated, the present value equivalent at a 1% interest or social discount rate requires a bond for \$6.1 billion (see Appendix E.2). If the discount rate were closer to zero, that is, if the market were to value present and future income streams almost equally, then a bond for \$9.62 billion would be required to guard the public from possible future losses due to the mine.

Conclusions

This Report provides estimates of the probable impacts of large-scale mining in Gulf Hammock on the rest of the regional economy. The 35 new jobs in industrial and mining “development” will cost the county dearly in terms of the environmentally-sensitive and highly-decentralized recreation, hunting, fishing, and tourist economy. If the county were instead to deepen its current “comparative advantage” in recreation and nature-based tourism, diversify its offerings as “recreational clusters,” promote entrepreneurship and hospitality training, in short, build on the true “legacy” that already exists, then the local economy can achieve income stability and create new jobs. This strategic thinking and action will promote superior, sustainable economic development in Levy County and provide for the health, safety and welfare of its Citizens for this and later generations.

²⁶ See Costanza & Perrings (1990); Freeman and Kunreuther (1997); Thomas et al (2009) on Florida; Ferreira and Suslick (2001) on Brazil; Taylor-Guevara (2009) on North Carolina; and Pa. DEP websites: <http://www.dep.state.pa.us/dep/deputate/minres/bmr/bonding/bondingrpt021100.pdf>, and also <http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-53142/5600-FM-MR0407.pdf>.

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Table 1.1 Levy County Economic Summary

	<u>Levy</u>	<u>Florida</u>	<u>Ratio</u> <u>L/FL</u>	<u>Rank</u> <u>in State</u>	<u>Amenity</u> <u>Index:</u>
	1	2	3	4	5
1. Per Capita Income 2007	24,417	38,615	0.64	46	
2. Ave. Earnings per job, 2006	26,620	41,436	0.64	57	
3. Earnings 2006					
a. % Wages & Salary	70	75	0.93	58	
b. % Proprietors' Income	13	9	1.42	11	
4. Median Household Income, 2005	29,917	42,437	0.70	64	
5. Population, 2007	40,045	18,680,000	0.002	44	
6. Density, persons/sq mi, 2007	36	346	0.10	55	
7. Unemployment Rate (%)					
a. 2007 Ave.	4	4	1.08	25	
b. Sept 2007	12	11	1.03	29	
8. Relative Wage Index (FCWI), 2007	94	100	-	-	1.062
9. Relative Price Index (FCRPI), 2007	89	100	-	-	1.123
10. Comprehensive Amenity Index = 1-(line 8	84	100	-	-	1.192

Sources:

1. Fl. County Rankings (FCR), 5.1 & US Dept of Commerce, Census Bureau, REIS website, www.bea.gov
2. FCR, 6.1
3. FCR, 5.2
4. FCR, 5.6
5. FCR, 1.1
6. FCR, 1.2
7. County unemployment for 2007 for 2007 from FCR, t.6.2 & last monthly rate from website FlaAgencyWorkforce Innovation, Local Area Unemployment Statistics by County
8. FSA, t. 24.81 (Florida County Wage Index) for identical job.
9. FSA, t. 24.80 (Florida County Retail Price Index).
10. Computed from lines 8 & 9 above.

Table 1.2 Levy County Strategic Advantages

	Levy (1)	Florida (2)	% L/FL (3)	Rank II (4)
A. Employment				
Private Employment - Selected Sectors 2007 - Thou	7,001	6,871	0.1	47
1. % Forestry & Fishing	7.2	1.3	553.8	12
2. % Construction	14.1	8.6	164.0	9
3. % Manufacturing	11.3	5.6	201.8	13
4. % Retail Trade	20.7	14.7	140.8	8
5. % Accommodation	10.9	10.9	100.0	35
B. Agriculture (Ag. Census, 2007)				
1. Av. Farm size ac	171	195	87.7	
2. Est. market value of land, build \$/ac	5,209	5,639	92.4	
3. Est. market value of all machinery, eqpt \$/farm	50,965	54,604	93.3	
4. Market value of ag. produce sold \$/farm	74,354	164,027	45.3	
a. Total (%)	100.0	100.0	100.0	29
b. Crop (%)	59.9	80.4	74.5	28
c. Livestock (%)	40.1	19.6	204.6	14
5. Net cash farm income of operation av.\$/farm	27,239	47,790	57.0	
6. Farm Production av. \$/farm	59,716	121,418	49.2	
7. Peanuts lbs.	48,886	341,137	14.3	3
C. Farm size Characteristics				
1. Total land in farms 2007 thou. acres	174.2	9,232	1.9	22
2. Profile				
a. % cropland	42.0	32.0	131.3	
b. % woodland	24.7	25.2	98.0	
c. % permanent pasture	29.7	34.9	85.1	
d. % land in farmsteads	3.6	7.9	45.6	
D. % Change in total farmland, 2002-2007				
	-3.3	-11.4	28.9	
E. Natural Resources				
1. Forest Products, 2003 - MCF ¹	21,151	508,686	4.2	3
a. Saw logs (MCF)	7,141	170,671	4.2	5
b. Veneer logs (MCF)	2,777	31,929	8.7	
c. Pulpwood (cords)	8,986	270,735	3.3	14
2. Timberland, 2006 (thou acres)	467	15,958	2.9	6
3. Fishing trips, 2007 (thou)	4,394	212	2.1	16
4. Fish & shell fish landings, 2007 (mill. lbs)	0.864	81	1.1	26
% fish	12.4	53.9	23.0	34
5. Shellfish Landings 2007 (thou lbs)	0.757	37.3	2	13
6. Aquaculture Value \$1,000 - USDA	12,420	-	-	2

Sources:

- A. From FL County Perspectives (FCP), 2008, T.6.00
- B. US Agricultural Census, Tables 1,2,3,5,8,10,11,15. Peanuts T.26
- C-D. US Ag Census, 2007, Table 8
- E. FCP 2008, T. 9.00, MCF = mill. cubic feet

Table 1.3 Levy County Employment, 2007- 2009

Industry Title	NAICS code	2007 Av Mo Empl	%	2008 Av Mo Empl	%	2009 Av Mo Empl	%	Change abs #
	1	2	3	4	5	6	7	8
Total, All Industries	10	9,129	100.0	8,614	100.0	8,208	100.0	-921
Goods-Producing	101	2,458	26.9	2,109	24.5	1,656	20.2	-802
Natural Resources and Mining	1011	646	7.1	589	6.8	555	6.8	-91
Construction	1012	1,025	11.2	842	9.8	694	8.5	-331
Manufacturing	1013	788	8.6	678	7.9	407	5.0	-381
Trade, Transportation, and Utilities	1021	2,018	22.1	1,928	22.4	1,867	22.7	-151
Wholesale Trade	42	251	2.7	224	2.6	202	2.5	-49
Retail Trade	44-45	1,446	15.8	1,377	16.0	1,365	16.6	-81
Transportation and Warehousing	48-49	189	2.1	191	2.2	164	2.0	-25
Information	1022	77	0.8	71	0.8	69	0.8	-8
Financial Activities	1023	413	4.5	412	4.8	381	4.6	-32
Professional and Business Services	1024	359	3.9	340	3.9	409	5.0	50
Education and Health Services	1025	1,788	19.6	1,780	20.7	1,853	22.6	65
Leisure and Hospitality	1026	899	9.8	895	10.4	935	11.4	36
Other Services	1027	195	2.1	156	1.8	135	1.6	-60
Public Administration	1028	921	10.1	923	10.7	903	11.0	-18

Source: Agency for TaskForce Innovation, website <http://www.labormarketinfo.com/Library/QCEW.htm>

Table 2.1A Imports of Aggregate and Cement, Vessel Metric Tons (MT), 2003-2009, thru Dec.

Commodity and Port:									% growth 2006-2009
251710 Pebbles, Gravel Et...	2003	2004	2005	2006	2007	2008	2009		
Jacksonville, FL	459,752	545,137	1,799,867	2,133,208	1,739,134	2,001,971	854,930		(149.5)
Port Canaveral, FL	268,206	337,489	311,827	375,805	630,279	790,973	719,509		47.8
Port Manatee, FL	407,961	375,126	271,167	314,137	249,244	332,271	47,573		(560.3)
Tampa, FL	2,049,859	2,057,725	2,209,479	2,116,375	2,114,030	2,330,934	1,062,004		(99.3)
Sum FI ports only	3,887,251	3,914,655	5,336,263	5,726,863	5,143,268	5,711,818	2,684,016		(113.4)
	-	-	-	-	-	-	-		
52321 White Portland Cem...	2003	2004	2005	2006	2007	2008	2009		
Miami, FL	7,289	14,543	9,515	503	379	20,428	23,845		97.9
Port Everglades, FL	138,447	155,658	154,963	171,123	142,941	80,968	89,218		(91.8)
West Palm Beach, FL	-	3,944	50,561	48,827	51,877	34,763	-		
Tampa, FL	83,163	84,519	111,217	91,428	90,379	58,239	45,017		(103.1)
Sum FI ports only	294,952	315,224	431,756	415,820	379,656	194,397	158,080		(163.0)
52329 Portland Cement Ex...	2003	2004	2005	2006	2007	2008	2009		
Port Everglades, FL	1,992,771	2,169,895	2,020,674	1,980,828	891,434	249,448	76,299		(2,496.1)
Port Canaveral, FL	905,657	1,003,317	1,086,585	1,070,928	331,586	18,824	-		
Port Manatee, FL	503,811	426,306	685,564	706,524	303,511	35,635	57,104		(1,137.3)
Tampa, FL	390,975	498,214	828,913	955,570	460,023	45,072	-		
Sum FI ports only	3,939,737	4,261,297	4,883,970	4,841,136	1,994,739	348,979	133,403		(3,529.0)

Table constructed from US Bureau of the Census: Foreign Trade Division USA Trade ® Online. Source: U.S. Import and Export Merchandise trade statistics. Accessed Feb. 10, 2010

Table 2.1B Exports of Aggregate and Cement, 2006-2009 YTD, thru Dec. By Vessel SWT (MT)

Commodity and port:					% growth
	2006	2007	2008	2009	2006-09
251710 Pebbles, Gravel Et.					
Miami, FL	2,555	1,439	1,915	2,181	(14.6)
Port Everglades, FL	1,568	8,392	11,234	18,373	1,072.1
West Palm Beach, FL	749	3,003	7,602	300	(60.0)
Jacksonville, FL	411	1,963	2,547	1,558	279.0
Port Canaveral, FL	3,508	57,898	1,536	572	(83.7)
Tampa, FL	5	8	-	108	2,169.9
Sum: Florida ports only	8,795	72,704	24,833	23,092	162.5
252321 White Portland Cem...					
Miami, FL	270	534	190	669	147.4
Port Everglades, FL	161	378	363	22,578	13,907.0
West Palm Beach, FL	1,087	678	262	1,616	48.7
Port Canaveral, FL	118	256	105	453	284.9
Tampa, FL	27	-	86	8,782	-
Sum: Florida ports only	1,636	1,846	919	34,099	1,983.8
252329 Portland Cement Ex...					
Miami, FL	4,704	8,363	7,831	10,075	114.2
Port Everglades, FL	6,509	23,565	15,602	56,266	764.4
West Palm Beach, FL	12,661	8,943	8,478	7,937	(37.3)
Jacksonville, FL	5,690	3,061	1,187	1,556	(72.6)
Sum: Florida ports only	29,564	43,932	33,099	75,836	156.5

Source: Constructed from data on www.StatUSA.gov, exports by commodity and detailed ports, accessed Feb. 10, 2010.

Table 2.2 Economic Impacts for a 35-person Limestone Mine in Levy County

	Limestone Mine				Hunting/Fishing Activities			
	<u>Direct</u> 1	<u>Indirect</u> 2	<u>Induced</u> 3	<u>Total</u> 4	<u>Direct</u> 5	<u>Indirect</u> 6	<u>Induced</u> 7	<u>Total</u> 8
1 Total Value Added (thou \$)	4,021	455	478	4,954	4,402	431	777	5,611
2 Labor income (thou \$)	1,938	261	219	2,418	3,247	260	355	3,863
3 Employee compensation	1,549	190	189	1,928	1,218	214	307	1,739
4 Proprietors income	389	71	30	490	2,029	46	48	2,124
5 Other Property type income	1,956	155	194	2,305	418	138	317	873
6 Indirect business taxes	127	39	64	230	737	33	105	875
7 Employment (no.)	35	7	9	52	89	8	15	112
8 Output (thou \$)	6,312	960	831	8,103	6,312	833	1,352	8,498
9 Tax Impacts (thou\$)	<u>Fed govt nonDefense</u>	<u>State/local nonEduc</u>	<u>All govt.</u>		<u>Fed govt nonDefense</u>	<u>State/local nonEduc</u>	<u>All govt.</u>	
10 Employee compensation	246	7	252		222	6	227	
11 Proprietary income	40	0	40		172	0	172	
12 Household Expendit.	177	13	190		328	21	349	
13 Corporations	201	79	280		76	30	106	
14 Indirect business taxes	14	216	230		53	822	875	
15 TOTAL	679	314	991		852	879	1730	

Source: IMPLAN model run with 35 new jobs in sector 25, using 2007 Levy County data base.

Method: The pattern of expenditures for hunting per sportsperson, from US FWS 2006 National Survey (Florida), Table 16. This pattern was distributed over the corresponding IMPLAN sectors and the total output was blown up to match the total output of the p

Table 3.1 Supply of Outdoor Recreation, 2008

		Resources/Facilities		
		All facilities in Levy-only*	Levy facilities potentially affected by Mine 10-mile radius**	Percent Levy-facilities affected %
		1	2	3
Outdoor Recreation Acreage	acres	164,377	120,326	73.2
Total Land Acreage	acres	157,086	113,987	72.6
Total Water Acreage	acres	7,292	6,339	86.9
Hunting acreage	acres	89,210	76,447	85.7
Hunting Land	acres	84,222	76,447	90.8
Picnic Tables	tables	445	123	27.6
Picnic Shelters		60	12	20.0
RV/Trailer camping sites	sites	480	157	32.7
Primitive camping sites	sites	8	2	25.0
Tent camping sites	sites	41	2	4.9
Cabins	no.	44	4	9.1
Bicycle trails (unpaved)	miles	122	109	89.3
Bicycle trails (paved)	miles	10	4	40.0
Canoe trails	miles	40	-	
Hiking trails (single use)	no.	7	12	n.c.
Hiking trails (single use)	miles	143	113	79.0
Jogging trails	miles		44	
Nature trails	miles	132	105	79.5
Archaeologica/historic sites	sites	101	87	86.1
Museums/interpretive buildings	sites	9	2	22.2
Commenorative sites	sites	2	-	
Saltwater beach areas	areas	2	2	100.0
Saltwater beach length	ft.	520	500	96.2
Saltwater fishing piers	no.	6	4	66.7
Saltwater fishing piers	length	815	770	94.5
Saltwater catwalks	no.	1	-	
Saltwater catwalks	no.	1,800	-	
Saltwater boat ramps	no.	4	2	50.0
Saltwater boat ramp lanes	no.	4	3	75.0
Saltwater marinas	sites	2	1	50.0
Saltwater slips/moorings	boats	37	35	94.6
Saltwater dry storage	boats	139	-	
Freshwater beach areas	areas	8	-	
Freshwater beach length	ft.	1,309	-	
Freshwater fishing piers	no.	4	-	
Freshwater fishing piers	length	220	-	
Freshwater catwalks	no.	10	2	20.0
Freshwater catwalks	no.	3,406	241	7.1
Freshwater boat ramps	no.	18	8	44.4
Freshwater boat ramp lanes	no.	20	7	35.0
Freshwater marinas	sites	7	3	42.9
Freshwater slips/moorings	boats	139	81	58.3
Freshwater dry storage	boats	10	10	100.0
Basketball goals	no.	42	4	9.5
Handball/racquetball courts	no.	1	-	
Shuffleboard courts	no.	15	-	
Tennis courts	no.	21	-	
Golf holes (total)	no.	45	-	
Volleyball courts	no.	6	-	

Notes: * Exclusively in Levy County, excl. facilities in several counties.

**includes parklands in neighboring counties not in col. 1.

n.c. = not comparable.

Source: FDEP, Outdoor Recreation in Fl. 2008, constructed from county files.

Table 3.2 Outdoor Recreation Facilities Potentially Affected by Proposed Mine

	NAME	LOCATION	COUNTY	ACRES		TOTAL
				LAND	WATER	
Total:				113,987	6,339	120,326
FEDERAL	CEDAR KEYS NATIONAL WILDLIFE REFUGE	16450 NW 31ST PL	LEVY	891	-	891
STATE	BIG BEND SEAGRASSES AQUATIC PRESERVE	WATER	TAYLOR, WAKULLA, LEVY, DIXIE, JEFFERSON	-	-	-
	GOETHE STATE FOREST	9110 SE CR 337	LEVY	51,851	-	51,851
	GULF HAMMOCK WILDLIFE MANAGEMENT AREA	WEST OF US 19	LEVY	24,625	-	24,625
	LOWER WACCASASSA CONSERVATION AREA	.	LEVY	297	-	297
	MARJORIE HARRIS CARR CROSS FLORIDA GREENWAY	.	LEVY, MARION, CITRUS, PUTNAM	-	-	-
	MARJORIE HARRIS CARR CROSS FLORIDA GREENWAY	.	LEVY, MARION, CITRUS, PUTNAM	-	-	-
	UPPER WACCASASSA CONSERVATION AREA		LEVY	4,376	-	4,376
	WACCASASSA BAY PRESERVE STATE PARK	SR 24	LEVY	27,962	6,136	34,099
COUNTY	CEDAR KEY BOAT DOCK	DOCK ST	LEVY	0	-	0
	CEDAR KEY BOAT RAMP	S R 24 AT #4 CHANNEL	LEVY	1		1
	DEVILS HAMMOCK - LEVY BLUE SPRINGS	NE 94TH PLACE BLUE SPRINGS COUNTY PARK	LEVY	3,400	-	3,400
	INGLIS ELEMENTARY SCHOOL PLAYGROUND	SR 40 WEST	LEVY	10		10
	VASSEY CREEK COUNTY PARK	R 40A	LEVY	10		10
	WITHLACOOCHEE BAY TRAIL	TRAILHEAD: FELBURN PARK US 19	INGLIS	-	-	-
	WITHLACOOCHEE PARK	SR 40	LEVY	44		44
MUNICIPAL	WITHLACOOCHEE-GULF PATHWAY	10001 ROCKY ISLAND RD INGLIS, FL 34449	LEVY	225	203	427
	YANKEETOWN WATER RESOURCES PARK	CR 40/NANCY PKWY	LEVY	2	-	2
	YANKEETOWN WILDERNESS	HIGHWAY 40	LEVY	269		269
NON GOV'T	BIG OAKS CAMPGROUND, INC.	14035 W RIVER RD	LEVY	3	-	3
	CATTAIL CREEK RV PARK	41 CATTAIL LN YANKEETOWN, FL 34498	LEVY	5		5
	CEDAR KEY RV PARK	G STREET & 7TH STREET CEDAR KEY, FL 32625	LEVY	3		3
	FIN AND FEATHER FISH CAMP	10930 SE 201ST STREET INGLIS, FL 34449	LEVY	2		2
	IZAAK WALTON LODGE	63RD ST & RIVERSIDE DR	LEVY	4		4
	RIVERSIDE MARINA	6451 RIVERSIDE DR YANKEETOWN 34498	LEVY	2		2
	WITHLACOOCHEE BACKWATERS RV PARK	CR 40	LEVY			
	YANKEETOWN BOAT CO., INC.	15 HICKORY AVE	LEVY	5		5

Source: FDEP, Outdoor Recreation in Florida 2008, from the county files.

Appendix Tables

Appendix Table A.1 Value of Residential and Timber Lands Surrounding Mine

Appendix Table A.2 Residential Property adjacent to Mine Lands

Appendix Table B.1 Tourist Spending in Cedar Key, Inglis, Yankeetown, by Kind-Codes 2007, 2008

Appendix Table B.2 State Parks in Levy County: Attendance Trends, 2006-2008.

Appendix Table C.1 Economic Impacts of 8 Ramps in Levy County

Appendix Table C.2 Economic Significance of Boating in Levy County (FWCC).

Appendix Table D.1 Levy County Recreational License Revenues, by Category, 2006-08.

Appendix Table D.2 Levy County Hurricane Evacuation Zones and Evacuation Routes.

Appendix Table E.2r Present Value of Future Economic Losses, 1% discount rate

Appendix Table E3 Region of impact image overlay

Appendix Table A.1 Value of Residential and Timber Lands Surrounding Mine

	1 Market Value	2 No. Acres	3 Assessed Value	4 Exemptions	5 Taxable value	6 ratio: assessed/ market	7 milleage	8 Taxes
1 Residential only, 68 parcels	4,436,184	712	2,498,709	226,000	2,271,807		0.015781	35,849
2 Timber only, 35 parcels	23,173,183	13,157	1,838,031	0	1,838,031		0.015781	29,005
3 Residential+Timber, 103 parcels	27,609,367	13,869	4,336,740	226,000	4,109,838		0.015781	64,854
4 per acre, Residential only	6,160		3,334	301	3,032	0.563		
5 per acre, Timber only	1,761		140	0	140	0.079		
6 per acre, Residential + Timber	1,991		313	16	296	0.157		

Source: Levy County Assessor Files for all codes surrounding mine, summed; separated into "timber only" and "all other: residences, mobile homes, hunting camps, vacant, small home sites, etc.

Appendix Table A.2 Residential Property adjacent to Mine Lands

Code	Market Value	Name	City	Acre	Assessed Value	Exempt-ions	Taxable value	sales price	DOR Code	Notes
1 02861-003-00	131,849	Bates, Marvin	Inglis	5	131,849	50500	81,349			Mobile Home
2 02861-006-00	88,422	Bates, Marvin	Inglis	50	88,422	0	88,422	107,500		Vacant
3 02861-007-00	390,587	Timberlake LLC	N/A	80	110,056	0	110,056	18700 + 100		Timber/Single Family
4 02864-000-00	955,514	Robinson Levaug	Inglis	225	279,406	50500	228,906			Pasture/Single Family, 1 Home, 3 Mobile Homes
5 02866-000-00	202,868	Jones, Robert	Inglis	40	35,441	0	35,441	57100 (95)		Timber
6 02866-001-00	272,176	Crichton, Bruce	Inglis	40	93,497	0	93,497	100000 (97)		Pasture/Mobile Family
7 02866-001-0B	158,454	Crichton, Bruce	Inglis	30	3,900	0	3,900	44000 (97)		Cropsoil
8 02866-002-00	158,086	Slattery, Edward	Inglis	10	100,271	50000	50,271	-		Single Family
9 02866-002-0A	64,696	Jones, Robert	Inglis	10	1,588	0	1,588	24500 (96)		Timber Non Classified
10 02866-003-00	147,257	Jones, Robert	Inglis	20	46,319	0	46,319	42000 (98)		Timber/Building
11 02866-005-00	201,632	Martin, Nelson	Inglis	40	34,357	0	34,357			Pasture/Mobile Family
12 02868-001-00	42,070	Gulf Rock	N/A	17.7	42,070	0	42,070			Vacant
13 02869-001-00	51,756	Gulf Rock	N/A	22.7	51,756	0	51,756			Vacant
14 02869-003-00	11,160	Lockhart, Michae	N/A	2.02	11,160	0	11,160	4100 (93)		Vacant
15 02870-000-00	9,069	Loftin, Harold	N/A	1.25	9,069	0	9,069	18,000		Vacant
16 02870-001-00	16,343	Baillie, John	Inglis	1.25	16,343	0	16,343	100		Single Family
17 02870-002-00	9,069	Lee, Dorothy	Inglis	1.25	9,069	0	9,069			Vacant
18 02870-005-00	22,446	Lindsey, John	Inglis	1.25	22,446	0	22,446			Single Family
19 02870-006-00	9,069	Lindsey, John	Inglis	1.25	9,069	0	9,069			Vacant
20 02870-007-00	25,489	More, John/Russ	Inglis	1.25	25,489	0	25,489	20000 (04)		Mobile Home
21 02870-008-00	9,242	Bailes, Stephen	N/A	1.25	9,242	0	9,242	0 + 8000 (06/05)		Vacant
22 02870-009-00	24,483	Loftin, Harold	Inglis	1.25	24,483	0	24,483	18000 (07)		Single Family
23 02870-010-00	33,836	Loftin, Harold/	Inglis	0	33,838	0	33,836	100		Mobile Home
24 02870-011-00	9,069	Lindsey, John	Inglis	1.25	9,069	0	9,069			Vacant
25 02870-012-00	19,380	Giuliani, Paul	Inglis	1.25	19,380	0	19,380			Single Family
26 02870-013-00	41,078	Robinson, Dougl	Inglis	2.25	28,545	25000	3,545			Single Family
27 02870-014-00	28,912	Davis, Cecil	Inglis	1.25	28,912	0	28,912			Single Family
28 02870-015-00	14,354	McLendon, Charl	Inglis	1.25	14,354	0	14,354	3000 (95)		Single Family
29 02870-016-00	16,336	Trosper, Ralph	N/A	2.5	16,336	0	16,336	103,000 (04)		Vacant
30 02870-017-00	15,305	Veals, John	Inglis	1.25	15,305	0	15,305			Single Family
31 02870-017-0A	41,429	Proveaux, Franci	Inglis	1.25	41,429	0	41,429	9,000		Single Family
32 02870-017-0B	6,833	Brady, Steven	Inglis	0.75	6,833	0	6,833	8400 (01)		Vacant
33 02870-017-0C	9,069	Haslam, David	N/A	1.25	9,069	0	9,069	100		Vacant
34 02870-017-BA	34,009	Brady, Steven	N/A	0.5	34,009	0	34,009	8400 (01)		Single Family
35 02870-019-00	38,269	Clepper Glenn/C	Inglis	1.25	38,269	0	38,269	55,000		Single Family
36 02870-020-00	25,802	Croft, Viola	Inglis	0.62	25,802	0	25,802			Single Family
37 02870-020-0A	6,195	Lindsey, John	Inglis	0	6,195	0	6,195			Vacant
38 02870-021-00	12,566	Mallory, Allan	N/A	2.5	12,566	0	12,566			Vacant
39 02870-022-00	18,094	Kraft, Leaf & Anc	Inglis	1.25	18,094	0	18,094	35000 (06)		Vacant
40 02870-023-00	11,344	Taylor, Charles/H	Inglis	1.25	11,344	0	11,344			Hunting Camps
41 02870-024-00	77,192	Carter, Steve	Inglis	1.25	77,192	0	77,192	3200 (97)		Single Family
42 02871-000-00	28,563	Lockhart, Michae	Inglis	5	28,563	0	28,563	1500 (80)		Single Family
43 02876-000-00	7,106	Cuscaden, Shirle	Inglis	0.78	7,106	0	7,106			Vacant
44 02876-001-00	13,821	Fonte, Irene	Inglis	1	13,821	0	12,821			Hunting Camps
45 02876-002-00	31,514	Manz, Robert	Inglis	0.5	31,514	0	31,514	26500 (03)		Single Family
46 02876-003-00	38,809	Gonzalez, Henry	Inglis	5	38,809	0	38,809	46000 (06)		Single Family
47 02876-004-00	4,082	Cuscaden, Marg	N/A	0.28	4,082	0	4,082			Vacant
48 02878-000-00	39,692	Azzarelli, Peter	Inglis	2.5	39,692	0	39,692			Single Family
49 02880-000-00	27,423	Townsend, John	Inglis	5	18,954	0	18,954			Pasture/Mobile Family
50 02896-000-00	12,566	Lesnett, Katherir	Inglis	2.5	12,566	0	12,566			Vacant
51 02896-001-00	33,578	Mercer, Loretta	Inglis	2.5	25,428	0	25,428	26000 (94)		Single Family
52 02896-002-00	23,943	Craig, Dean	Inglis	5	23,943	0	23,943	16500 (91)		Hunting Camp
53 02897-000-00	102,336	Big Oak Tree Yac	Inglis	3.3	102,336	0	102,336			Single Family
54 02897-001-00	45,136	Griffin, Daniel	Inglis	0	45,136	0	45,136	2600 (82)		Single Family
55 02897-002-00	12,084	Kurtz, Curtis	Inglis	0.46	12,084	0	12,084			Mobile Home
56 02897-003-00	26,628	Cattanach, Bren	Inglis	1.16	26,628	0	26,628	100		Mobile Home
57 02898-000-00	25,916	Baillie, James	Inglis	2.2	25,916	0	25,916			Hunting Camp
58 02898-002-00	2,259	Olson, Karl/Olso	Inglis	0.13	2,259	0	2,259			Vacant
59 02898-003-00	6,183	Olson, Karl/Olso	Inglis	0.13	6,183	0	6,183			Hunting Camp
60 02898-004-00	27,452	Merchant, Ronni	Inglis	0.5	27,452	0	27,452			Mobile Home
61 02898-005-00	57,290	Olson, Karl/Olso	Inglis	0	57,290	0	57,290			Single Family
62 02898-006-00	136,186	Trosper, Ralph	Inglis	0.71	117,253	50000	67,253	103,000		Single Family
63 02898-006-0A	10,262	Trosper, Ralph	Inglis	1	10,262	0	10,262	100		Vacant
64 02898-007-00	3,791	Olson, Karl/Olso	Inglis	0	3,791	0	3,791			Vacant
65 02898-008-00	2,462	Olson, Karl/Olso	Inglis	0.17	2,462	0	2,462			Vacant
66 02899-000-00	55,022	Deskins, George	Inglis	5.25	55,022	0	55,022	21000 (97)		Single Family
67 02902-000-00	140,205	Bill Curry Ford	Inglis	40	140,205	0	140,205	60000 (81)		Single Family
68 02914-001-00	61,066	Gustafson, Janic	N/A	1.22	18,109	0	18,109			Vacant

Appendix Table B.1 Tourist Spending in Cedar Key, Inglis, & Yankeetown, by Kind-Codes, 2007 & 2008

Cedar Key, Inglis and Yankeetown 2008							
Kind Code	Kind	Kind Code	Reporting Units	Gross Sales	Taxable Sales	Tax Collected	Implan code
08	Restaurants, Lunchrooms, and Catering Services	08	18	4,170,752	1,951,270	293,307	
09	Taverns and Night Clubs	09	12	1,924,021	425,737	135,439	413
28	motorboat , yacht dealers	28	4	373,230	342,119	24,004	328
39	Hotels, Apartments and House Lessors	39	42	6,866,214	5,542,458	491,965	411
55	Gift, Card and Novelty Shops	55	13	1,134,419	386,577	72,302	330
59	Admissions	59	9	459,504	246,024	30,454	409
83	Parking Lots, Boat Docking and Storage	83	5	577,061	293,493	27,552	340
82	Office Space and Commercial Rentals	82	39	1,131,172	309,162	85,150	384
sum kind-categories above			103	16,636,373	9,187,677	1,075,023	

(motorboat row from 2007 inserted; it was omitted from 2008 list, RW)

Cedar Key, 2008						
Kind Code	Kind	Kind Code	Reporting Units	Gross Sales	Taxable Sales	Tax Collected
01	Grocery Stores	01	6	3,391,559	1,748,346	122,727
08	Restaurants, Lunchrooms, and Catering Services	08	12	3,648,159	1,647,627	256,912
09	Taverns and Night Clubs	09	4	1,013,561	16,392	70,933
39	Hotels, Apartments and House Lessors	39	30	5,375,676	5,095,001	452,723
55	Gift, Card and Novelty Shops	55	8	808,084	203,935	56,436
59	Admissions	59	4	131,398	126,194	9,220
sum			64	14,368,437	8,837,495	968,953

Kind Codes with less than four reporting units have been suppressed

Inglis and Yankeetown 2008 by subtraction						
Kind Code	Kind	Kind Code	Reporting Units	Gross Sales	Taxable Sales	Tax Collected
08	Restaurants, Lunchrooms, and Catering Services	08	12	779,193	202,924	170,579
09	Taverns and Night Clubs	09	0			
39	Hotels, Apartments and House Lessors	39	12	1,490,539	447,457	39,242
55	Gift, Card and Novelty Shops	55	5	326,336	182,642	15,866
59	Admissions	59	5	328,106	119,830	21,233
sum:			34			

CEDAR KEY, INGLIS & YANKEETOWN 2007						
Kind Code	Reporting Units	sector #	Gross Sales	Taxable Sales	Tax Collected	
		IMPLAN				
08	21	413	4,812,499	2,466,098	335,684	Restaurants, Lunchrooms, and
09	12	413	1,628,294	589,916	115,027	Taverns and Night Clubs
28	4	328	373,230	342,119	24,004	motorboat , yacht dealers
39	44	411	7,382,319	5,914,472	524,801	Hotels, Apartments and House
55	17	330	1,124,343	419,667	70,409	Gift, Card and Novelty Shops
59	10	409	350,568	157,390	23,345	Admissions
82	40	384	939,546	182,090	70,525	Commer rentals
83	5	340	810,339	314,826	29,849	Parking Lots, Boat Docking and
sum		153	17,421,139	10,386,577	1,193,644	

Source: DOR data

Appendix Table B.2 State Parks in Levy County: Attendance Trends, 2006-2008.

Property designation	2006-07	2007-08	Percentage change
Total Florida	19,519,202	20,735,874	6.2
<u>Levy County Parks:</u>			
Cedar Key	20,511	19,054	-7.1
Cedar Key Scrub	16,631	17,012	2.3
Fanning Springs	281,346	346,885	23.3
Waccasassa Bay	26,315	27,309	3.8
totals	344,803	410,260	19.0

Source: State of Florida, Department of Environmental Protection, Recreation and Parks Management Information System, unpublished data. Computed from BEBR, Florida Statistical Abstract 2008, Table 19.52.

Economic Impact Report

The Input and Results of Launch Site Economic Impact Estimates

Table 1 - Model Input

Launch Site Name	8 RAMPS IN LEVY COUNTY
Type of Launch Site	Government for Public Use
County	LEVY
Spending Area	Medium Spending Area
Local vs. Tourists	Heavily tourist (50% local, 50% tourist)
Estimated Number of Launches per Year	71575

Table 2 - Spending on Boat Trip by Boats Launched at This Launch Site (\$)

Category	Average Spending per Launch	Total Spending per Year at This Site
Lodging	34.6	2,474,348
Marina Services	3.2	226,893
Restaurant	17.1	1,226,796
Groceries	14.5	1,034,259
Boat Fuel	25.8	1,848,067
Auto Fuel	16.8	1,205,323
Marine Supplies	6.8	484,563
Recreation & Entertainment	2.4	174,643
Shopping	3.9	282,006
Total	125	8,956,896

TABLE 3 - Economic Impacts of Trip Spending by Boats Launched at This Launch Site

Sector/Spending category	Sales (\$ thousand)	Jobs	Labor Income (\$ thousand)	Value Added (\$ thousand)
Direct Effects				
Lodging	2,474.3	51.3	841.3	1,459.9
Marina Services	226.9	3.5	72.6	131.6
Restaurant	1,226.8	28.8	355.8	503.0
Recreation & Entertainment	174.6	2.7	55.9	101.3
Grocery Stores (Margins & Sales)	261.7	5.3	107.3	154.4
Gas Service Stations (Margins & Sales)	680.9	6.7	211.1	463.0
Sporting Goods/Equipment Retail Margins	201.6	4.8	82.6	123.0
Other Retail Trade (Margins & Sales)	96.7	1.8	40.6	57.1
Wholesale Trade (Margins & Sales)	167.7	2.0	62.0	110.7
Local Production of Goods	-	-	-	-
Total Direct Effects	5,511.3	106.8	1,829.2	3,103.9
Secondary Effects	1,630.3	17.5	377.5	925.2
Total Effects	7,141.6	124.4	2,206.8	4,029.0

Economic Significance of Boating in Levy County

Table 1. Number of Registered Boats and Estimated Boat Days in Levy County

Category	Boat Type and Size										Total
	Power <16'	Power 16' - 19'	Power 20' - 22'	Power 23' - 28'	Power 29' - 40'	Power 41'+	Sail <23'	Sail 23'+	PWC	Canoe/Kayak	
Number of Boats	1,647	901	500	317	55	10	13	18	59	161	3,681
Average Boat Days	23	31	33	33	38	45	25	37	31	28	30
Total Boat Days	37,552	27,571	16,650	10,556	2,107	449	325	659	1,835	4,428	102,130

Table 2. Total Spending on Boat Trips by Boat Owners Registered in Levy County

Category	Total (\$ Thousands)	Percentage
Lodging	\$4,070.5	14%
Marina Services	\$1,584.2	5%
Restaurant	\$4,424.6	15%
Groceries	\$3,529.1	12%
Boat Fuel	\$9,400.2	32%
Auto Fuel	\$3,406.6	12%
Marine Supplies	\$1,611.6	5%
Recreation & Entertainment	\$851.2	3%
Shopping	\$678.4	2%
Total	\$29,556.3	100%

Table 3. Total Annual Craft Spending (not including purchases of boats) by Boat Owners Registered in Levy County

Category	Total (\$ Thousands)	Percentage
Slip	\$1,527.1	8%
Loan Payments	\$2,596.8	14%
Replacement Motors	\$1,235.7	7%
Replacement Trailers	\$294.2	2%
Insurance	\$1,351.3	7%
Repairs	\$3,804.0	20%
Accessories	\$7,806.1	41%
Taxes	\$335.0	2%
Total	\$18,950.2	100%

Table 4. Economic Significance of Trip Spending and Annual Craft Spending by Boats Registered in Levy County

	Trip Spending	Annual Craft Spending	Total
Direct Effects			
Sales (\$ Thousands)	\$16,208.5	\$10,888.7	\$27,097.2
Jobs	299.5	169.2	468.7
Labor Income (\$ Thousands)	\$5,296.6	\$3,816.0	\$9,112.6
Value Added (\$ Thousands)	\$9,083.0	\$5,862.2	\$14,945.3
Total Effects			
Sales (\$ Thousands)	\$20,806.6	\$13,803.0	\$34,609.6
Jobs	350.4	203.0	553.5
Labor Income (\$ Thousands)	\$6,352.1	\$4,675.7	\$11,027.7
Value Added (\$ Thousands)	\$11,705.5	\$7,601.4	\$19,306.9

Table 5. Economic Significance of Boats Registered in Levy County

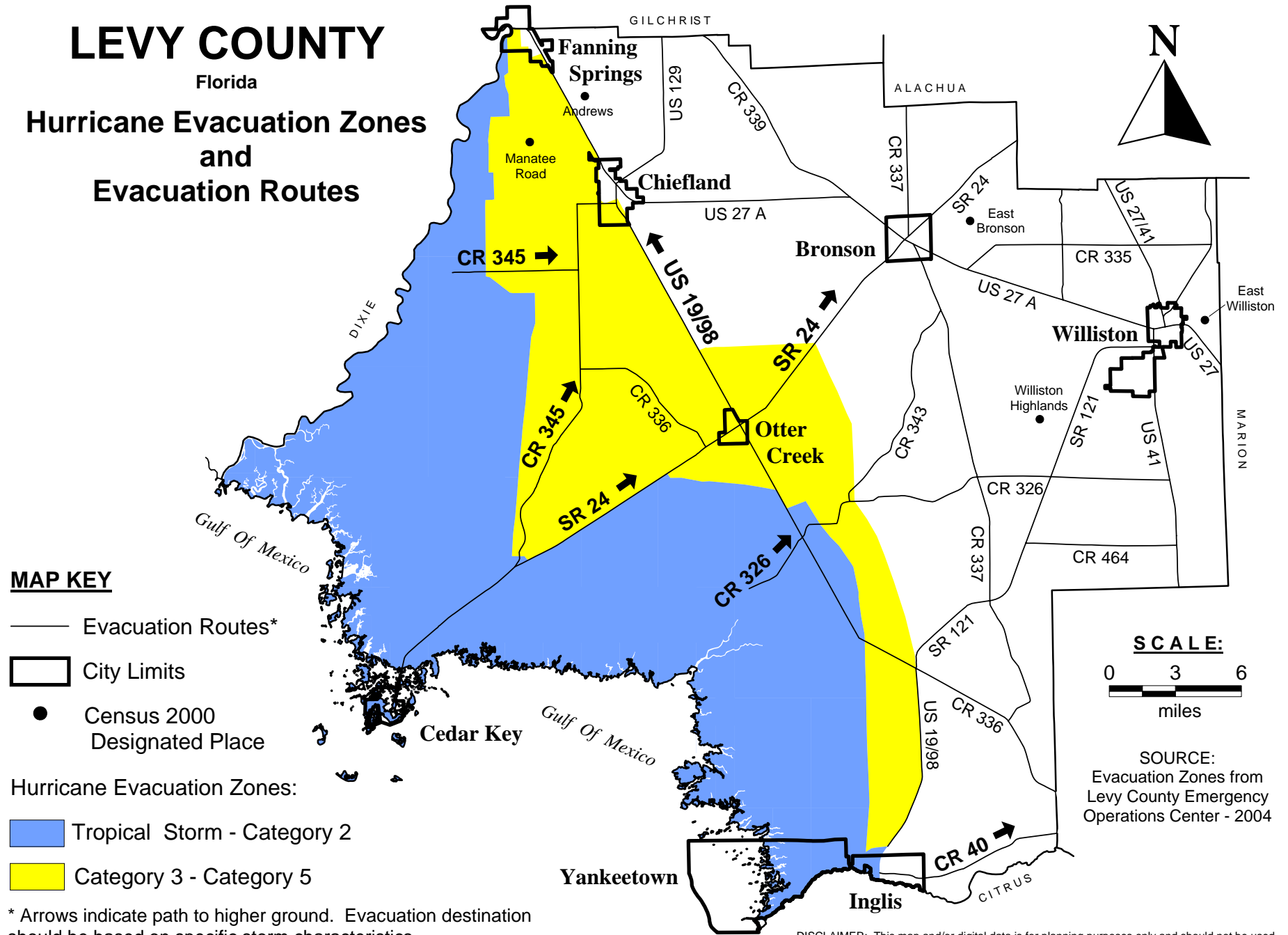
Sector/Spending Category	Sales (\$ Thousands)	Jobs	Labor Income (\$ Thousands)	Value Added (\$ Thousands)
Direct Effects				
Lodging	\$4,070.5	84.3	\$1,365.1	\$2,410.7
Marina Services	\$3,111.3	47.8	\$1,010.5	\$1,798.3
Restaurant	\$4,424.6	103.8	\$1,285.1	\$1,823.4
Recreation & Entertainment	\$851.2	13.1	\$276.5	\$492.0
Repair & Maintenance	\$3,804.0	63.2	\$1,014.6	\$1,332.1
Insurance & Credit	\$1,520.1	14.7	\$638.7	\$1,230.8
Gas Service	\$2,855.9	28.0	\$881.6	\$1,954.2
Other Retail Trade	\$5,300.9	100.2	\$2,225.3	\$3,164.0
Wholesale Trade	\$1,118.7	13.6	\$415.1	\$739.7
Other Local Production of Goods	\$40.1	-	-	-
Total Direct Effects	\$27,097.2	468.7	\$9,112.6	\$14,945.3
Secondary Effects	\$7,512.4	84.8	\$1,915.1	\$4,361.7
Total Effects	\$34,609.6	553.5	\$11,027.7	\$19,306.9



LEVY COUNTY

Florida

Hurricane Evacuation Zones and Evacuation Routes



MAP KEY

— Evacuation Routes*

▭ City Limits

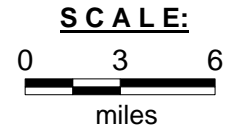
● Census 2000 Designated Place

Hurricane Evacuation Zones:

■ Tropical Storm - Category 2

■ Category 3 - Category 5

* Arrows indicate path to higher ground. Evacuation destination should be based on specific storm characteristics.



SOURCE:
Evacuation Zones from
Levy County Emergency
Operations Center - 2004

DISCLAIMER: This map and/or digital data is for planning purposes only and should not be used to determine the precise location of any feature. The Withlacoochee Regional Planning Council provides no warranty for the accuracy or availability of the data.



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CURRICULUM VITAE
RICHARD WEISSKOFF, Ph.D.
 (ECONOMIST)

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RICHARD WEISSKOFF is a regional, development, and environmental economist with wide experience in South Florida, Latin America, and the Caribbean. He is an expert on regional economic impact analysis and proficient in both REMI and IMPLAN systems. Prof. Weisskoff computed the regional economic impact analysis for the \$8 billion Everglades Restoration. His book, The Economics of Everglades Restoration: Missing Pieces in the Future of South Florida, was published by Edward Elgar Press in May 2005.

EDUCATION

Harvard University, M.A. (Economics) 1966; Ph.D. (Economics), 1969
 Harvard College, B.A. (Social Studies), magna cum laude, Phi Beta Kappa, 1964

REGULAR TEACHING POSITIONS

Professor (Economics), Dept. of International Studies, University of Miami, 2005 to present.
 Associate Professor (Economics), Dept. of International Studies, U. of Miami, 1989-2005, tenured, 1994.
 Associate Professor, Dept. of Economics, Bar-Ilan University, Israel (1983-1987)
 Associate Professor, Dept. of Economics, Iowa State University (Ames) (tenured, 1974-1983)
 Assistant Professor of Economics, Yale University (1969-1974)

VISITING PROFESSORSHIPS

University of Notre Dame, Notre Dame, Ind.; Visiting Associate Professor; Spring 1988.
 American University, Washington, D.C.; Visiting Associate Professor; 1981-82.
 University of Puerto Rico, Rio Piedras, P.R.; Visiting Professor; Jan.-Dec. 1979.
 National Polytechnical Institute, Mexico, D.F.; Visiting Professor; July 1978.
 National University of San Antonio de Abad, Cuzco, Peru; Visiting Professor; Nov. 1976-Feb. 1977.
 National Technical University of the Altiplano, Puno, Peru; Visiting Professor; Sept.-Nov. 1976.

NON-ACADEMIC POSITIONS HELD

U.S. Southern Command, Department of Defense, Academic Fellowship with the University of Miami, January-December 2008.

United Nations, New York: Department of International Economic and Social Affairs (DIESA)
 Economic Affairs Officer, International Economic Relations Branch. (Prepared chapter for World Economic Survey and World Social Situation.) March-Sept. 1989.

United Nations, New York: Statistical Office (UNSO)
 Associate Statistician. (Analyzed and systematized estimates of national income growth rates for 92 developing countries.) Nov. 1988-Feb. 1989.

Interamerican Development Bank, Consultant. (Sent to Paraguay to review income distribution project in 1987 and participated in study missions to Barbados in 1988 and to Paraguay in 1990 as the team specialist on "the social sectors.")

Settlement Study Center, Rehovot, Israel; Consultant. (Reviewed teaching programs of Integrated Rural Development in third world countries.) March-June 1987.
 Jerusalem News/Jewish Press (Israel and New York). Weekly column, "The Economy in Review," 1987.

Harvard Institute for International Development, Cambridge, Mass., Consultant. (Drafted program for Employment & Enterprise Policy Analysis Project for AID-sponsored 3-year research program.) July-Oct. 1985.

Brookings Institution, Washington, D.C.; Special Guest. (Research for Congressional testimony and book on Puerto Rico.) 1981-82.

Food and Nutrition Service, U.S. Department of Agriculture, Washington, D.C.; Economic Analyst. (Analyzed the impact of food stamps on the Puerto Rican economy.) 1980-81.

Vanderbilt University Group, Rio de Janeiro, Brazil, Consultant. (Directed a team of economists researching costs and benefits of education spending in 5 Brazilian states.) Summer 1969.

Transport Research Project in Colombia, Harvard Development Service, Consultant. (Worked with engineers and economists on multisector simulation model of transport flows.) Winter 1969.

U.S. Agency for International Development, Consultant. (Field work in Northeast Brazil for U.S. AID transport study.) Summer 1965.

Bureau of the Budget, Washington, D.C., assistant to the Deputy Director. (Evaluated Investment Guaranty Program.) Summer 1965.

Capital Transportation Company, Hato Rey, Puerto Rico. (Hauling and carrying furniture.) Summer 1962.

Legal Cases and Recent Public Testimony:

1. Beach renourishment Case: Florida Dept. of Environmental Protection, Administrative Court: Surfriider Foundation, Inc., Snook Foundation, Inc., Capt. Danny Barrow, Tom Warnke, and Herbert Terry Gibson, vs. Town of Palm Beach, Fl. DEP, and the Internal Improvement Trust Fund, Aug.18 & 20, 2008 Deposition. Trial in progress.
2. Phosphate mining: Hardee County (Florida) County Commission. Testimony on the Economic Impacts of Permitting New Phosphate Mining. Testimony given on April 28, 2008, and Report presented on August 14, 2008.
3. Rock-mining Studies: Strategic Aggregate Review Task Force, State of Florida: research & testimony on the limerock mining industry, Tampa Meetings: Dec. 18-19, 2007; Miami Meetings: Jan. 8-9, 2008.
4. Rock-mining (Miami-Dade) Case: U.S. District Court, So. Dist Fl. Case No. 03-23427-CIV-Hoeveler, Sierra Club, Natural Resources Defense Council, and National Parks Conservation Assoc. vs. Army Corps of Engineers, U.S. Fish and Wildlife Service and Intervenors.
 Court Meeting Aug. 21, 2008, Judge Hoeveler re-convenes the parties to consider Appellate decision;
 Judgment Issued, July 12, 2007, shutting 20% of mine; Weisskoff Declaration July 25, 2007; Request for Stay "Denied" on Oct. 3, 2007.
 Comments on Supplemental Environmental Impact Statement (SEIS) filed, Oct. 22, 2007.
 Deposition given July 14, 2006; court testimony on July 19, 2006.
 Deposition (rebuttal witness) given Nov. 16, 2006; court testimony given on Nov. 30 and Dec. 1, 2006.
5. Rock-Ming: Lee County Commission, DR/GR Committee (Density Reduction/Groundwater Resources), Jun 25, 2008, Ft. Myers: Presentation on Economic Issues and Economic Modeling of the Limestone Mining sector.
6. Hang-tags for Reading Glass Case (Patent Infringement): U.S. District Court, So. Fl. Case No. 91-847, 92-2016, 94-1920, CIV-Highsmith, Magistrate Judge Garber, Al-site Corp & Magnivision, Inc. vs. VSI International, Inc. Deposition given Feb. 27, 2001; Court trial March 2001.
7. Nicaragua mass damages (airplane crash): 1990 plane en route to Miami, settled prior to trial.
 Journal articles published on the issues involved and research done on the case:
 - a) "The Forensic Economist in the International Setting: Applying Purchasing Power Parities (PPP) Theory to Nicaraguan Damage Claims," Journal of Forensic Economics, 7, 1 (Dec. 1993), pp. 111-117.
 - b) "A Reply and New Findings," Journal of Forensic Economics, 11, 1 (Winter 1998), pp. 57-65).
 - c) "Purchasing Power Parity or Official Exchange Rates for International Settlements: A Central American Case," Journal of Legal Economics, 3, 2 (July 1993), pp. 33-49.

Puerto Rico economy: Expert witness in divorce case regarding the economy of Puerto Rico, Miami-Dade County Court, 2000

BOOKS

The Economics of Everglades Restoration: Missing Pieces in the Future of South Florida (Edward Elgar, Cheltenham,

UK and Northampton, MA, 2005.

Factories and Food Stamps: The Puerto Rico Model of Development. Johns Hopkins University Press, Baltimore, 1985.

REFEREED ARTICLES AND CHAPTERS IN REFEREED BOOKS:

- "Environmental Infrastructure and Socio-economic Indicators in San Pedro Sula, Honduras," (with Daniel E. Meeroff and Helena Solo-Gabriele), International Journal of Environment and Pollution June 2007, pp. 102-116.
- "To Save a City: Grassroots Movement toward Reforestation in Ica, Peru" Chapter 8, Symposium Volume, Globalization and Sustainable Development, University of South Florida Press, Tampa, FL. (2006).
- "A Tale of Two Models: IMPLAN & REMI on the Economics of Everglades Restoration", in D.J. Rapport, W.L. Lasley, D.E. Rolston, N.O. Nielsen, C.O. Qualset, and A.B. Damania (eds) Managing for Healthy Ecosystems, Lewis Publishers, Boca Raton, FL: Lewis Publishers, 2003, pp. 1303-1324. May be viewed at: <http://exchange.law.miami.edu/everglades/>
- "Missing pieces in ecosystem restoration: the case of the Florida Everglades", Economic Systems Research 12 (3), 2003, 271-303. <http://exchange.law.miami.edu/everglades/science/weisskoff/missingpieces.pdf>
- "The Decline of the U.S. Footwear Industry and the Expected Impact of a Free Trade Agreement between Colombia and the United States," North American Journal of Economics & Finance, Vol. 5, No. 1 (1994), pp. 55-78.
- "Forty-One Years of Structural Continuity and Social Change in Nicaragua, 1950-1991," Journal of Developing Areas, Vol. 28 (April 1994), pp. 379-392.
- "The Dilemma of Export Revival: Nicaraguan Agriculture at a Turning Point," Chapter 12, in Irma T. de Alonso, ed., Central America: Trade, Industrialization, and Integration in the Twentieth Century Central America. (Praeger, Westport, CT and London, 1994), pp. 237-252.
- "The Forensic Economist in the International Setting: Applying Purchasing Power Parities (PPP) Theory to Nicaraguan Damage Claims," Journal of Forensic Economics, Vol. 7, No. 1 (Dec. 1993), pp. 111-117.
- "Purchasing Power Parity or Official Exchange Rates for International Settlements: A Central American Case," Journal of Legal Economics, Vol. 3, No. 2 (July 1993), pp. 33-49.
- "Economic Growth and Health in Crisis: The Case of Paraguay," Bulletin of the Pan American Health Organization (PAHO). Published in Spanish as "Expansi3n econ3mica y crisis de salud en el Paraguay," Bolet3n de la Oficina Sanitaria Panam3ricana, Vol. 114, No. 6 (June 1993), pp. 520-535. Reprinted in Propuestas Democr3ticas (Asunci3n), Vol. 1, No. 1 (Jan-Mar 1994), pp. 99-123.
- "The Paraguayan Agro-Export Model of Development," World Development, 20 (10) (October 1992), pp. 1531-40.
- "Income Distribution and Economic Change in Paraguay, 1972-88," Review of Income and Wealth 38(2) June 1992 165-183.
- "Income Distribution and the Enterprise of the Americas Initiative," Journal of InterAmerican Studies and World Affairs, Vol. 33, No. 4 (Winter 1991), pp. 111-132.
- "The Political Economy of the Israeli Inflation," in Pamela S. Falk, ed., Inflation: Are We Next? Hyperinflation and Solutions in Argentina, Brazil, and Israel, (Lynne Rienner Publishers, Boulder, Colorado, 1990), pp. 127-152.
- "The Structure of Income Inequality in Puerto Rico", (with E. Wolff), Journal of Development Economics 9 1981, 205-228.
- "The Growth and Decline of Import Substitution in Brazil--Revisited," World Development, Vol. 9 (1980), pp. 647-675. Published in Spanish in El Trimestre Econ3mico, Vol. 47 (2), No. 186 (April - June 1980), pp. 377-430.
- "Consumption Expenditure Patterns and the Puerto Rican Economy," Revista de Ciencias Sociales (Puerto Rico) 21(21)3-4 (Sept.-Dec. 1979), 361-410.
- "Trade, Protection and Import Elasticities for Brazil", Review of Economics and Statistics 6(1) February 1979, 58-66. Published in Portuguese in Pesquisa e Planejamento Econ3mico, Vol. 8, No. 2 (August 1978), pp. 525-544.

- "Twenty-five Years of Import Substitution in Brazil, 1948–1973" Pesquisa e Planejamento Economico 8(2) April 1978 1-32.
- "Linkages with Linkages: Industrial Tracking in an Enclave Economy", (with E. Wolff), Economic Development and Cultural Change, Vol. 25, No. 4 (July 1977), pp. 607-628.
- "Equity, Efficiency, and Social Welfare in Latin America" Journal of Economic Development 2(1) (July 1977), 65-108.
- "Traversing the Social Pyramid: A Comparative Review of Income Distribution in Latin America", (with A. Figueroa), Latin American Research Review 9 (2) Summer 1976, 71-112. Published in Spanish in El Trimestre Economico 44 (4), No. 176 (October - December 1977), pp. 887-946. Reprinted in Robert Ferber, ed., Consumption and Income Distribution in Latin America: Selected Topics, (Washington, D.C.: OAS for ECIEL, 1980), pp. 257-94.
- "Income Distribution and Export Promotion in Puerto Rico", Chapter 10 in K. Polenske and J. Skolka, ed., Advances in Input-Output Analysis (Ballinger Publishers, Cambridge, Mass., 1976), pp. 205-228.
- "Development and Trade Dependence: The Case of Puerto Rico", (with E. Wolff), Review of Economics and Statistics, Vol. 57, No. 4 (November 1975), pp. 470-477. Reprinted in I. Sohn, ed., Readings in Input-Output Analysis, (Oxford University Press, New York, 1986), pp. 406-416.
- "The Political Economy of the Educational System", (with F. Blau), Chapter 17 in H. Jon Rosenbaum and W.G. Tyler, eds., Contemporary Brazil: Issues in Economic and Political Development, Praeger Publishers, New York, 1972 371-398.
- "Demand Elasticities for a Developing Economy: An International Comparison of Consumption Patterns", Chapter 14 in H.B. Chenery, ed., Studies in Development Planning, Harvard University Press, Cambridge, MA 1971, 322-359.
- "Income Distribution and Economic Growth in Puerto Rico, Argentina and Mexico", Review of Income and Wealth, Series 16, No. 4 (December 1970), pp. 303-332. Reprinted as Chapter 2 in A. Foxley, ed., Income Distribution in Latin America, (Cambridge University Press, 1976). [Also published in Spanish in Alejandro Foxley, ed., La Distribucion del Ingreso en America Latina, Chapter 4 (Fondo de Cultura Economica, Mexico, 1973) and Leopoldo Solis, ed., La Economia Mexicana, Chapter 6, (Fondo de Cultura Economica, Mexico, 1973)].
- "The Colombia Experience, 1950-62", in E. T. Haefele, ed., Relating Transport to National Goals, Brookings, 1969 122-176.

OTHER PUBLICATIONS: INVITED PAPERS

- "Regional Economic Impacts", in US Army Corps of Engineers, Central and Southern Florida Project Comprehensive Review Study, Jacksonville, FL, 1998, Appendix E, pp. 281-310.
- "La Conquista de la Industria Norteamericana de Zapatos por las Importaciones, y el Futuro para el Calzado Colombiano," in Hector Ochoa-Diaz, ed., Estudio para la negociaci'n de la zona libre comercio entre Colombia y Estados Unidos (ICESI, Cali, Colombia, 1994), pp. 215-236.
- "Basic Human Needs and the Democratic Process in Latin America," North-South Issues Vol. II, No. 2 (1993) pp. 1-6.
- "Social Factors in Latin American Economic Development" in Henry Hamman, ed., Setting the North-South Agenda: U.S.-Latin American Relations in the 1990s. Coral Gables, FL, North-South Center, U. of Miami, pp. 43-47.
- "Economic Adjustment and Net Transfer of Resources from Developing Countries," Ch. 8 in World Economic Survey 1989: Current Trends and Policies in the World Economy, United Nations, New York, 1989, pp. 151-186.
- "The Economy of Israel", in Collier's Encyclopedia, Macmillan, New York, 1989 edition, Vol. 13, pp. 332-336.
- "Crops vs. Coupons: Agricultural Development and Food Stamps in Puerto Rico", Chapter 8 in Jorge Heine, ed., Time for Decision: the United States and Puerto Rico, North-South Publishers, Lanham, Md., 1983, pp. 135-183.

OTHER PUBLICATIONS: CONGRESSIONAL TESTIMONY

- "Economic Models of the Caribbean", in Caribbean Basin Policy. Hearings before the Subcommittee on InterAmerican

Affairs, Committee on Foreign Affairs, U.S. House of Representatives, 97th Congress, First Session. July 14, 1981. (Washington, D.C., U.S. Government Printing Office, 1981), pp. 47-78.

"The Impact of Food Stamps on the Puerto Rican Economy", in General Farm Bill of 1981 Food Stamp Program. Hearings before the Subcommittee on Domestic Marketing, Consumer Relations, and Nutrition of the Committee on Agriculture, U.S. House of Representatives, 97th Congress, First Session. March 30, 1981. Serial No. 97-G, Part 2. (Washington, D.C., U.S. Government Printing Office, 1981) pp. 597-600, 729-733.

"Food Stamps and the Puerto Rican Economy", in Proposed Re-Authorization of the Food and Agricultural Act of 1977--Food Stamps, Part II. Hearings before the Committee on Agriculture, Nutrition, and Forestry, U.S. Senate, 97th Congress, First Session. March 16, 1981. (Washington, D.C., U.S. Government Printing Office, 1981), pp. 18-30.

PROJECTS IN PROCESS

1. "Economics of the International System: Tools, Rules, and Schools" (Book-length manuscript currently being used in my courses as basic text and exercises.)
2. On the Everglades:
 - a) Wisdom of the River: A Retrospective on Everglades Restoration. An edited book of papers to be presented at a conference scheduled for the late spring 2005 of the early pioneers of Everglades restoration, many of whom published chapters in the landmark volume, The Environmental Destruction of South Florida (ed. by William Ross McCluney, University of Miami Press, 1969). The conference, scheduled for the spring of 2005, is to be sponsored by the U. Miami student chapter of "Friends of the Everglades," for which I am faculty adviser. (A Project with Island Press, Washington, D.C. & Covelo, CA, in process.)
 - b) Ecosystem Economics. This is a scholarly book written for the non-economist. This volume interprets my economic findings first reported in scientific detail in the Economics of Everglades Restoration (in press) and explains how economic modeling can remove the "mystery" of how rapid growth in South Florida undermines the goals of ecosystem restoration. This is an Island Press project (in process).
3. On Water, Environment, and Economy:
 - a) The Demand for Water under Conditions of Spectacular Growth. This volume reports the methodology, data, and findings resulting from my two-year research project sponsored by the National Park Service on forecasting water demands in South Florida. Together with a collaborator in Nevada, we are comparing our results for Miami-Dade County to Washoe County (Reno). We expect the volume to be of great interest to the environmental community and to the professional engineering and water-forecasting community. (Project with Edward Elgar Publishers, in process).
 - b) A series entitled: Society and Environment in Latin America, for Edward Elgar Publishers, reporting the results of different research projects sponsored by PRENDE (Program in Environment and Development) at the University of Miami, sponsored by our four-year grant from the V.K. Rasmussen Foundation and begun in 2001.

Volume I: Water and Poverty in Latin America: A Survey and Case Studies (edited by R Weisskoff as principal author and co-author of three of the chapters.

CURRENTLY FUNDED RESEARCH

Team member, Grant from National Institute of Health (NIH) for \$400,000 per year for three years to establish an "Exploratory Center for Interdisciplinary Research" at UM. The grant is entitled, "Vector-Borne Disease Control in Urban Environments." (Prof. John Beier, Principal Investigators. For work in Trinidad, Costa Rica, Egypt, Israel, and Kenya.

Principal Investigator, Grant from V. Kann Rasmussen Foundation for \$100,000, for each of six years, to establish the Program in Environment and Development (PRENDE), (with D. Suman, RSMAS, and H. Solo-Gabriele, Engineering, collaborators). Please see www.PRENDE.org for our program. Please see www.vkrf.org on the sponsoring foundation, and www.miami.edu/miami-magazine/featurestory2.html for journalistic report on our work.

RECENT ECONOMIC IMPACT STUDIES

2008: Economic Impact of Limestone Mining on South Florida: IMPLAN and REMI compared.

- 2007: Economic Impact Analysis in the Legal Setting, REMI, IMPLAN, and other Models (Presented in Federal Court).
- 2003: Comparing Costs and Options for the Miami River: Bridges vs. Tunnels (Feb 2003). For the Miami River Commission. See <http://www.miamirivercommission.org/PDF/tunnel%20study.pdf>
- 2002: Economic Impact of the Miami River Greenway. For the Trust for Public Land (TPL).
- 2002: Economic Models and Economic Forecasting in the South Miami Watershed Study. For Keith & Schnars, P.A.
- 2001: Comparing Economic Impacts of an Industrial Park and a County Recreation Park in Central Broward County. For Southern Facilities Development Inc. and the Broward County Commission.
- 2001: Testified in U.S. District Court, Southern District of Florida. Al-site v VSI International 91-847-CIV Highsmith. For the defense with Mayer, Brown and Platt.
- 2000: Economic Impact Analysis of the NASA Technological Outreach Program. For the Technological Research and Development Administration, Titusville, FL.
- 1998: Economic Impacts of Everglades Restoration: "Regional Economic Impacts", in US Army Corps of Engineers, Central and Southern Florida Project Comprehensive Review Study, ("The Restudy") Jacksonville, FL, Appendix E, pp. 281-310.

PROFESSIONAL ORGANIZATIONS

- Member American Economics Association
 International Association for Research in Income & Wealth
 International Input-Output Association
 International Society for Ecological Economics

HONORS, AWARDS, & FELLOWSHIPS

- Certification of Recognition: from Florida Earth Project, Sept. 1, 2000, for Contribution to an Understanding of the Florida Environment.
- Provost Research Award, 1999 and 1997.
- Research Award from the National Science Foundation for the project entitled: "The Economics of Peasant Communities: An Analysis of Poverty in Puerto Rico and the Peruvian Sierra," 1979-83.
- Teaching Award from the National Science Foundation under the Program, "Scientists and Engineers in Economic Development," for work in Cuzco, Peru, 1980-82.
- Research Award from the American Council of Learned Societies and the Social Science Research Council, for project, "The Economy of the Sierra," in Andean Peru, 1978-79.
- Research Award from Manpower Administration, U.S. Department of Labor, for project, "Employment Projections for Puerto Rico in the 1980's," 1977-78.
- Collaborative Award from the Social Science Research Council, for work in Peru with Professor A. Figueroa, for project "Traversing the Social Pyramid: Rural and Urban Distribution in Peru," 1976-77.
- Research Award from Manpower Administration, U.S. Department of Labor, for updating and extension of Puerto Rican simulation model, 1974-75.
- Faculty Award from Center for the Study of Education, Yale University, to study the Brazilian education system, 1973.
- Faculty Award from the Antilles Research Program for the study of the Cuban economy, 1972-73.
- Research Award from the National Science Foundation, for international comparisons of income distribution, 1971-72.

Research Award from Manpower Administration, U.S. Department of Labor, to develop a model of Puerto Rican growth and income distribution, 1970-71.

Faculty Award from Concilium in International Affairs, Yale University, for the study of the Puerto Rican Economy, 1969.

Fellowship Award, Center for International Affairs, Harvard University, for the study of income distribution in three countries, 1968-69.

Graduate Prize Fellow in Economics, Harvard University, 1964-67.

Woodrow Wilson Fellowship (Honorary); Fulbright Scholarship to Venezuela (declined), 1964-65.

Phi Beta Kappa, Harvard College, 1964.

John Harvard Scholarship, Harvard College, 1961-64.

Harvard Traveling Fellowship for Latin America, Summer 1963.

Detur Prize for Scholarship, Harvard College, 1961.

PROFESSIONAL ACTIVITIES

Mar. 12, 2005: Participant in the Utility Round Table, City of Ft. Lauderdale, FL.

Apr. 6, 2005: Guest lecturer, Miami Dade University, Hialeah Campus, "Holocaust Memorial Lecture."

Jan. 12, 2004: Lecture: "Forecasting Water Demands for Miami-Dade County: Preliminary Results," for the Economic Planning Staff (and tri-county guests), Miami-Dade Water and Sewer Administration (WASA), Coral Gables, FL.

March 25, 2004: Lecture: "Economy of South Florida," Florida Earth Foundation, Course for Public Officials, Ft. Lauderdale. Also on Feb. 20, 2003, at the Museum of Science and Discovery, Ft. Lauderdale.

Oct. 2003: Participant in National Symposium on the Economic Value of Urban Parks sponsored by the Trust for Public Land in Philadelphia.

June 4, 2002: Lecture for the Florida Earth Project on Economic Models of South Florida, Homestead, FL.

Sept. 6, 2002: I met with City of Miami's Budget Director and Economic Development Deputy to brief them on the Miami River and Greenway Project, an Economic Impact Analysis.

Sept. 12, 2002: Trust for Public Land, South Florida Office, "Miami River Greenway: an Economic Impact Analysis". Presentation to Research Committee.

I published on the Op-Ed page of the Miami Herald: "Park Would be Economic Boost, not a Tax Drain," Tues., June 12, 2001, under "Other Views," p. 9B.

Department of Environmental Protection (DEP), West Palm Beach: conference with experts on waste water injection and economic growth, April 17, 2001.

Presentation to Miami City Councilman Johnny Winton and staff (10 consultants) on the Application of Economic Models to Urban Redevelopment, Aug. 23, 2001.

Broward Alliance, Economics Staff, full day workshop on "Using IMPLAN to evaluate new development opportunities critically," Sept. 4, 2001.

South Florida Regional Planning Council, brought the Planning Dept. Heads from Miami-Dade, Broward, and Palm Beach counties to a 3 hr. workshop I led on "Regional Economic Models (REMI) for Planning in South Florida," Oct. 25, 2001.

- Presentation to the Governor's Commission on the Everglades, Meeting Mon., Feb 28, 2000, at Miami International Airport Hotel, "Why we need economic models of South Florida's Growth," Videotape of the meeting shows the cross-fire exchange with various commissioners.
- March 8 – 9: Florida Legislative Session opened in Tallahassee. I was sent by a Florida State agency, TRDA – Technological Research and Development Administration (Titusville), to explain the results I found using a regional economic impact model for Florida's space program to members of the Finance Committees and the Governor's Office.
- June 23-25, 2000: I was sent jointly by The Joint Center for Urban Affairs and by the Governor's Commission on the Everglades to Tallahassee to work with Mike O'Connell of the Fl. State Dept. of Labor. 4. Nov. 8, 2000: I delivered a lecture at the FIU Environmental Symposium, on "Urban 21 and the Future of South Florida."
- Participant in the "Socio-Economic" workshop of the Biscayne Bay Partners Initiative (BBPI), a giant series of four ongoing working groups, including scientists, citizens, and business. I helped draft the final report of our group, a survey of the County and attended meetings: May 27 (FIU North Campus);, Aug 29 (RSMAS Library);, Sept 19 (NOAA Conference Rm., Virginia Key).
- Met on Thurs., Sept. 7, with Ms. Bertha Henry, Deputy County Administrator of Broward County, on how her county might use economic models. (She and an assistant came to my home office in North Miami Beach.)
- Met on Feb. 8 with Ms. Marlene Conaway, Chief of Planning for Monroe County, on how her county might use economic models. (She and an assistant came to my home office.)
- Met with Mr. David Benjamin, President of Third Planet on Sept. 11 in Ft. Lauderdale to debrief him and his colleague on the Urban 21 Conference in Berlin, Germany.
- Presented a seminar at the University of Florida's Indian River Research and Education Center in Ft. Pierce, entitled, "Economics of the Restudy for Everglades Restoration," July 19, 1999.
- Presented a special guest lecture for the Science Coordination Team (SCT) of the South Florida Restoration Task Force, the 15 agency coordinating group on Everglades restoration, entitled, "Economics of the Restudy: What Economic Forecasting Shows," at the University of Florida's Research and Education Center in Ft. Lauderdale, Oct. 14, 1999.
- Participated in the Agriculture-Ecosystem Conference entitled, "Integrating Agriculture and Ecosystem Solutions in South Florida" at the University of Florida's Extension Conference Center in West Palm Beach, April 29, 1999.
- Participated in the Conference on Economic Development of the Strategic Regional Policy Plan Working Group, sponsored by the South Florida Regional Planning Council in Hollywood, FL, July 16, 1999.
- Participated in Panel, "Considering Kosovo Alternatives," sponsored by the Unitarian Universalist Society, May 13, 1999.
- Participated and entered Public Comments at four public meetings of the Governor's Commission for a Sustainable South Florida.
- Met with Economic and Demographic Planners at the Dade County Planning Department, demonstrating the use of REMI and IMPLAN models, June 15, 1999.
- Presented a seminar on "REMI Models for Everglades Restoration: Preliminary Results," to the Economic Planning Department of the South Florida Water Management District in West Palm Beach, Fl, Nov. 15, 1999.
- Led a Class of Economics Students tutored children at Homestead Migrant Camp, Redlands Migrant Project.
- Presented "Review of Economic Modeling" to the Socio-Economic Group, US Army Corps of Engineers, Regional Headquarters, Jacksonville, FL, March 3, 1998.
- Presented seminar, "Economics in the Everglades Restoration," at Economics Faculty Research Symposium, Institute for Food and Agricultural Sciences, (IFAS), University of Florida, Gainesville, March 24, 1998.
- Lecture, "The Sustainability of the South Florida Economy," special lecture to the South Florida Restoration Task Force Working Group and the Governor's Commission for a Sustainable South Florida, Hollywood, Fl, April 8, 1998.

Lecture, "Economic Impact Models for the Everglades Restoration," Research Seminar at the Everglades Research and Education Center, University of Florida, Belle Glade, FL, July 22, 1998.

Participant, "Social Science Symposium on South Florida Everglades," Key Largo, FL, Feb. 26-27, 1998.

Speaker, Roundtable on "The Impact of Global Policies on the Most Vulnerable," sponsored by the Miami and Greater Miami chapter of the United Nations Association, N-S Center Conference Room, Dec. 8, 1998.

Appointed to the Full Cost Accounting Committee of the Governor's Commission for a Sustainable South Florida and contributed to the Reports, "Principles of Full Cost Accounting in South Florida" and "Review of the 8 ½ Square Mile Area." Public comments at the Jan, March, May, and July meetings of the Governor's Commission.

LANGUAGE PROFICIENCY

Spanish, Portuguese, Hebrew.

Some field capacity in Kechwa and Aymara (Andean Peru) and Guarani (Paraguay).