

FLORIDA MARINE RESEARCH PUBLICATIONS

**Mining of Submerged Shell Deposits:
History and Status of Regulation and Production of
the Florida Industry**

WILLIAM K. WHITFIELD, JR.

**Florida Department of Natural Resources
Marine Research Laboratory**

Number 11

October 1975

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100 Eighth Avenue SE

St. Petersburg, Florida 33701

ABSTRACT

Whitfield, W. K., Jr. 1975. Mining of Submerged Shell Deposits: History and Status of Regulation and Production of the Florida Industry. Fla. Mar. Res. Publ. No. 11. 49 p. Florida shell dredging companies produced more than 28.5 million tons (25.9×10^6 mT) of shell from submerged deposits from 1931 to early 1974 and paid over \$5 million in royalties to the state. Shell of the American oyster, *Crassostrea virginica*, made up the majority of this production. Although shell dredging was practiced in Florida prior to 1923, State governmental monitoring did not begin until that time. Since then monitoring and control of the industry have become increasingly strict and requirements for payment of royalties based on amount of production have been imposed. The intricate history of State control through numerous agencies, statutes, regulations, and policies has been traced and documented. Shell dredging requires approval from a number of State and federal environmental agencies under the overall administration of the Florida Department of Natural Resources and Florida Trustees of the Internal Improvement Trust Fund. Two shell dredge companies are now active in Florida, and both operate in Tampa Bay. Royalties of \$0.32 per ton are distributed between the general state budget, a trust fund, and a fund for environmental impact studies of shell dredging.

Contribution No. 255, Florida Department of Natural Resources Marine Research Laboratory

This public document was promulgated at an annual cost of \$2763 or \$1.38 per copy to make research results and marine resources information available to scientists and the public.

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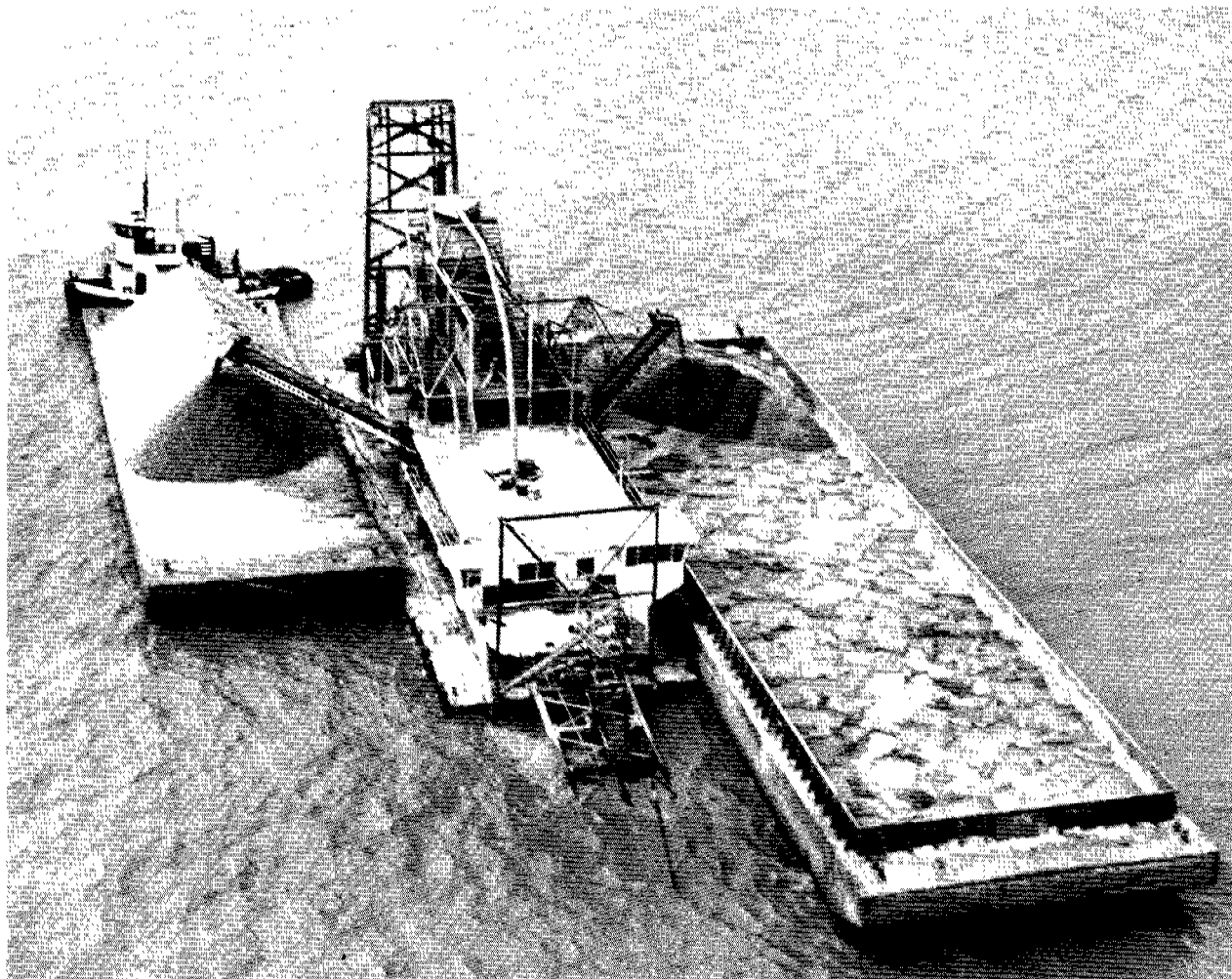


Figure 1. Typical modern shell-dredging equipment (photo courtesy of the Photo Mart, Morgan City, La., Jess T. Grice, photographer).

INTRODUCTION TO THE ORIGIN AND RECOVERY OF SUBMERGED SHELL DEPOSITS

Many Florida bays and estuaries conceal a natural resource of great value — large deposits of shell from oysters (*Crassostrea virginica*) and other mollusks. Oyster shell reefs, which constitute the bulk of this resource, have never been adequately inventoried by the State. However, Arndt (1971) estimated that 29 million cubic yards (21.75×10^6 tons; 22.1×10^6 mT) of accessible shell remain.

Most oyster shell deposits currently utilized developed in the last several thousand years (15,000 years ago to the present) as sea level was

slowly rising toward its present stand. During this period, as now, oysters flourished in developing coastal estuaries with new generations growing upon the shells of their predecessors and slowly building up thick deposits of shell. As sea level continued to rise, conditions, particularly salinity, became unfavorable in the seaward portions of other areas of these estuaries causing many oyster reefs to die out. These reefs have become covered with varying amounts of sand or silt in the intervening thousands of years (Butler, 1954; Gunter, 1969; Quick, 1972) and the resulting buried fossil shell deposits are now recovered by hydraulic dredges with mechanical cutter heads. The shell is used primarily in the construction industry (construction aggregate, lime, cement preparation, etc.).

In recent years controversy concerning the environmental impact of shell dredging has been growing increasingly intense (Wilson, 1950; Masch and Espey, 1967). Previous studies (Ingle, 1952; Gunter, 1969; Simon and Dyer, 1972) and ones currently in progress will provide the data with which lawmakers will make the final decision on whether or not to allow future shell dredging in Florida. A severe environmental abuse of the industry, the dredging of live, productive oyster reefs, was prohibited in Florida in 1947 (Chapter 370.16 (32), Florida Statutes, Appendix II). Prior to this, attempts to require dredgers to construct artificial oyster reefs to offset destruction of productive reefs were generally ineffectual. Recommendations being followed by State agencies that presently administer this industry are designed to minimize environmental consequences of shell dredging (Appendix V).

The Florida shell dredging industry is regulated by a lease system involving approval of the Trustees of the Internal Improvement Trust Fund¹, the Florida Department of Natural Resources², the Florida Department of Pollution Control, the U.S. Army Corps of Engineers, and in some cases, the Florida Game and Freshwater Fish Commission. Additionally, dredging in Tampa Bay (Hillsborough County) must be approved by the Tampa Port Authority.³

This paper describes the evolution of shell dredging regulatory measures and the history of shell production in Florida subsequent to 1932. Figures (Figures 2-7) showing dredging areas, tables detailing production, royalties received, and leases granted; and appendices containing pertinent statutes, DNR regulatory guidelines, a facsimile shell dredge lease, DNR statement on

environmental impact of shell dredging, and a facsimile shell dredge permit are provided.

ESTABLISHMENT OF LEASE REGULATIONS

In 1923, Chapter 9289, Laws of Florida, first authorized the Trustees, as Florida's sovereign land management agency, to lease mineral rights on or under lands owned by the State and to set the lease terms. As amended by Chapter 13670, Acts of 1929, the Trustees were authorized to sell or lease a variety of minerals and materials, including fossil shell, located only on or under those lands to which the Trustees had title. Resulting proceeds (royalties) were credited to the Trustees.

By 1969, the above had been amended into Chapter 253, Florida Statutes. A section (253.45) authorized the Trustees to sell or lease these assets not only from land held by the Trustees but also from that held by several listed State governmental agencies. This, however, required approval of the State agency having jurisdiction over the land involved. Other amendments required that all sales or leases be conducted by competitive bid and that resulting proceeds be credited to the agency which held jurisdiction of the lands involved (Appendix I).

PROHIBITION OF DREDGING FROM LIVING OYSTER REEFS

Dredging from unproductive live oyster reefs was permitted before 1947. Lease contracts up to that time required that an artificial oyster reef using dredged shell be constructed near dredge sites to offset "loss" of the natural reef, but this privilege was often abused by dredgers because of the lack of State supervision. In addition, productive oyster reefs were sometimes dredged.

Dredging from all live oyster grounds was prohibited in 1947 by Chapter 370.16 (32), Florida Statutes (Appendix II). Some lease contracts for a few years after 1947 continued to contain the requirement that dredgers construct artificial oyster reefs, but few were actually constructed. The scientific monitoring of shell dredging activities to prevent damages to live oyster reefs and other environmental assets

1. Effective July 1, 1961, the name of the Trustees of the Internal Improvement Fund was changed to the Trustees of the Internal Improvement Trust Fund. "Trustees", herein, refers to this Agency which was established in the middle of the last century.

2. Effective July 1, 1969, agencies of the State of Florida underwent legislative reorganization and the Florida Board of Conservation was renamed the Florida Department of Natural Resources, which is abbreviated to "DNR" herein. The Board of Conservation originated in 1913 when the Shellfish Commission was established to supervise the fishing industry. Additional duties were added to this Commission and other environmental entities were combined with it until the Board of Conservation was established in 1933.

3. The Tampa Port Authority was originally named the Hillsborough County Port Authority. It is referred to as the "Port Authority" herein. This entity was established in 1945.

began in 1949 with the organization of the Florida Oyster Division under the direct supervision of a DNR marine biologist (R. M. Ingle).

ORIGIN OF PRESENT LEASE AND MONITORING PROCEDURES

Leases were formerly granted solely by the Trustees. In 1947, however, approval by the DNR became requisite for granting of shell leases by the Trustees (Chapter 24121, Florida Statutes) and the Oyster Conservation Fund was established for disposition of the royalties. The Trustees acted as the collecting agency and turned over all proceeds to the DNR.

In later years, the DNR was given a progressively greater role in granting and enforcement of leases. On July 28, 1958, the Florida State Cabinet, the executive board for both DNR and the Trustees, authorized the DNR (beneficiary of shell royalties), to inspect the books and records of the leaseholders (Trustees). On January 2, 1962, the Cabinet made the DNR solely responsible for the administration of dead shell leases and collection of royalties; the Trustees continued to formally issue leases. The two boards passed a resolution dated July 12, 1962, establishing the current general policy for the operation of such leases (Appendix III).

As a consequence of increased environmental awareness and the governmental reorganization in the late 1960's, all lease applications are now reviewed and certified by the Trustees, the DNR, the Department of Pollution Control, the Game and Fish Commission, and the U.S. Corps of Engineers. The Trustees, however, continue to issue leases and the DNR continues to administer these as before.

ESTABLISHMENT OF ROYALTIES

ROYALTY BASIS

Since 1923, the State has required shell dredgers to pay a set royalty fee based on the amount of shell dredged or sold. From 1923 to 1962, the royalty paid was based on the number of cubic yards of shell dredged. After 1962, the royalty basis for most leases was changed from

cubic yards to tons and from the amount dredged to the actual amount sold. This change allowed shell to be dredged and stockpiled whenever demand was low without the payment of royalties.

In 1958, the DNR began to inspect the books and records of the private shell dredging companies with respect to shell productivity and royalty payments. It was discovered that 3,000 pounds (1,361 kg) was being considered equivalent to one cubic yard (.765 m³) when, in fact, a cubic yard of shell seldom exceeded 1,500 pounds (680 kg) (as had been repeatedly brought to the attention of the state, but without action, in 1941 and 1942 by the late A. L. Kinzie of Ft. Myers). All lease contracts thereafter specify 1,500 pounds as tantamount to one cubic yard.

Royalty amounts have varied irregularly from time to time and lease to lease but ranged from \$0.05 per cubic yard in the 1930's to \$0.32 per ton presently. From 1931 through March, 1974, the shell dredging companies paid over \$5 million in royalties on 28.5 million tons (25.9 x 10⁶ mT) of shell.

USE OF ROYALTIES BY THE STATE

From 1923 to 1947, royalties derived from shell dredging were credited to general agency use of the Trustees. An exception to this was lease number 165 (Table 4). In 1947, with creation of the Oyster Conservation Fund, use of royalties was restricted to propagation and preservation of oyster grounds. Amendments in 1951 and 1961 (to Chapter 24121) established the Marine Biological Research Trust Fund which included the Oyster Conservation Fund and expanded usage of the monies to finance general marine research as well as oyster work. In 1963 (Chapter 63-396, Florida Statutes), the purposes of the trust account were expanded further to include marketing, transportation, processing, and promotional research of seafood products.

In 1972 (Chapter 72-204, Florida Statutes), royalties derived from shell dredging were redirected into the State General Revenue Fund (Appendix II). Royalty monies retained by the State from dredging activities in Hillsborough County have continued to be placed in the Trust Fund, however, because such shell was dredged from Port Authority held property, not sovereignty lands. None of these funds have been utilized since 1972.

The dredging companies in Tampa Bay, the Trustees, and the University of South Florida agreed in early 1973 that the dredging companies would pay to the Trustees an additional 10 cents per ton royalty to finance shell dredge environmental impact studies by University personnel. A tentative impact study report is due by mid-1975.

DEVELOPMENT OF TAMPA BAY DREDGING REGULATIONS

The Port Authority was established by Chapter 23338, Acts of 1945, and title to a large part of Tampa Bay was transferred from the Trustees to this new body. This transfer was later contested by the Trustees after the Port Authority claimed royalty rights from shell dredged in Tampa Bay, but the act was upheld by a final decree in the 13th Judicial Circuit, dated July 23, 1956. The extent of the Port Authority lands was subsequently increased by amendments in 1959, 1963, and 1970 until all submerged lands in Hillsborough County were included (Chapter 70-716, Florida Statutes).

The Port Authority agreed on September 24, 1958, to release all claims against the Trustees and the DNR for royalties from the sale of shell from its lands between 1945 and October 1, 1957. The Trustees and the DNR simultaneously agreed to pay to the Port Authority 50 percent of the royalties derived from shell dredged from Port Authority land beginning October 1, 1957, and the Trustees agreed to keep a public record of the quantity of shell taken from Port Authority lands. The Trustees and the Port Authority were co-lessors of all Tampa Bay leases issued after the date of the agreement even though some of those leases were outside Port Authority jurisdiction or even Hillsborough County (i.e. Manatee and Pinellas Counties). Accordingly, royalties on Tampa Bay leases issued after September 24, 1958, were collected by the State, and 50% of the monies were paid to the Port Authority. Tampa Bay leases were non-exclusive (not limited to a single lessee) and covered "that part of Tampa Bay within the statutory boundaries of Hillsborough, Pinellas and Manatee Counties". Thus the Port Authority received part of the royalties from some shell dredging outside its jurisdiction.

Prior to 1966, no state records were kept showing where Tampa Bay dredging actually occurred. Dredging occurred in many areas, some being redredged in the 1970's. Audit and

political questions were raised concerning how the royalty payments were being divided between the Port Authority and the State, and about the rights of the City of St. Petersburg since a portion of its corporate limits include a portion of Tampa Bay within Pinellas and Hillsborough Counties. As a consequence, on March 18, 1966, the Port Authority assigned to the Trustees their interest in royalties of shell taken from Pinellas and Manatee Counties. Since then, the Port Authority has been entitled to their half of the royalties from the sale of only that shell dredged from within Hillsborough County. Apparently, the City of St. Petersburg has no rights to royalties from shell dredged within its corporate limits, whether the dredging takes place in Hillsborough or Pinellas County (city limits extend into both counties).

RECORDING OF LEASES, PRODUCTION AND ROYALTIES

The Trustees have issued numerous leases, including shell dredging leases, since 1923. Each was assigned a consecutive number at some point during its administrative evaluation, either when the lease application was received, during lease negotiations, or when the lease was issued. Numbers were assigned without regard to the lease type, material to be mined, or the State agency having jurisdiction. Some confusion has resulted since some lower numbered leases were issued after others having higher numbers and because no differentiation in lease type (phosphate, clay, gravel, shell, etc.) or agency jurisdiction was ascertainable by lease number.

Small shell production operations existed in Florida prior to 1931 but the records and other data are lost. Records for shell dredging between 1931 and 1938 are incomplete and unreliable. After 1938, there was a gradual growth and improvement in production and record keeping. Nevertheless, some actual dredge sites were not designated or even known by the State as late as 1966. Royalty figures were often recorded without date or production figures. Mention is made of several extinct leases existing from 1931 to 1955 without a file, production record, and/or royalty record. Records on production and royalties in general have improved with time and recent records are quite complete. (Production figures and lease summaries from 1932 through April, 1974, are presented in Tables 1-8).

TABLE 1. RECENT SHELL DREDGING LEASES AND PERMITS

LEASE NO.	LESSEE	DATE OF LEASE	EXPIRATION DATE	GENERAL AREA OF LEASE	ROYALTIES		BOND
					RATE	MINIMUM	
1718	Radcliff Materials Co. Mobile, Alabama	Feb. 5, 1962	Feb. 4, 1967 renewed to Feb. 5, 1972 not renewed	All sovereignty lands west of the east boundary of Gulf County. Exclusive	2667¢/ ton	\$40,000/ year	\$ 12,000
1788	Benton and Company Tampa, Florida	Feb. 1, 1962	Feb. 2, 1972	Tampa Bay in Hillsborough and Pinellas Counties. Non-exclusive	25¢/ ¹ ton	\$10,000	\$300,000 ³
		Renewed Feb. 9, 1972	Dec. 31, 1972	Tampa Bay in Hillsborough County. Non-exclusive.	22¢/ ton	\$15,000	0
		Renewed by permit Dec. 13, 1972	Dec. 13, 1975	Tampa Bay in Hillsborough County. Non-exclusive.	32¢/ ² ton	0	0
2233	Bay-Con Industries, Inc. Co., Tampa, Florida	Feb. 2, 1967	Feb. 2, 1972	Tampa Bay in Hillsborough and Pinellas Counties. Non-exclusive.	20¢/ ton	\$ 1,200	\$ 7,000
		Renewed Feb. 9, 1972	Dec. 31, 1972	Tampa Bay in Hillsborough County. Non-exclusive.	22¢/ ton	\$ 5,000	0
		Renewed by permit Dec. 13, 1972	Dec. 13, 1975	Tampa Bay in Hillsborough County. Non-exclusive.	32¢/ ² ton	0	0
2235	Fort Myers Shell and Dredging Company Fort Myers, Florida	Jan. 31, 1967	Feb. 1, 1972 not renewed	Caloosahatchee River, Lee County, 449 acres. Charlotte Harbor, Lee County, 213 acres. Non-exclusive.	20¢/ ton or / cu yd	\$ 2,500	\$ 5,000

¹ 20¢ royalty and 05¢ penalty.² 22¢/ton royalty to DNR; 10¢/ton to Trustees to finance environmental impact studies.³ Reduced by \$30,000/ year to a minimum of \$10,000.

TABLE 2. KNOWN PRODUCTION HISTORY OF A RECENTLY ACTIVE SHELL LEASE COMPANY, BAY-CON INDUSTRIES, INC.

Area of Lease: Tampa Bay in Hillsborough and Pinellas Counties

LEASE NO.	DATE LEASE ISSUED	EXPIRATION DATE	REPLACED BY	ROYALTY RATE	YEAR	REPORTED PRODUCTION	ROYALTY PAID
440	Feb. 7, 1946	Feb. 7, 1949	639	7.5¢/cu yd	1946	109,615 cu yd	\$ 8,224.10
					1947	184,157 cu yd	13,811.77
					1948	105,443.5 cu yd	7,891.99
					1949	24,237 cu yd	2,443.90
					Totals	423,452.5 cu yd	32,371.76
639	Apr. 28, 1949	Feb. 2, 1952 extended to Feb. 7, 1962	1703	10¢/cu yd	1949	90,815 cu yd	8,729.03
					1950	169,713 cu yd	16,971.30
					1951	197,960 cu yd	19,796.00
					1952	245,653 cu yd	24,565.30
					1953	347,072 cu yd	34,707.20
					1954	424,886 cu yd	42,488.60
					1955	571,646 cu yd	57,164.60
					1956	621,654 cu yd	62,165.40
					1957	541,547 cu yd	54,154.70
					1958	496,071 cu yd	49,607.10
					1959	575,965 cu yd	57,596.50
					1960	521,370 cu yd	52,137.00
					1961	491,094 cu yd	46,109.40
					1962	18,891 cu yd	1,889.10
					Totals	5,284,337 cu yd	\$ 528,081.23
1703	Feb. 2, 1962	Feb. 7, 1967	2233	20¢/ton	1962	306,024.3 tons	60,260.31
					1963	392,939.76 tons	78,589.94
					1964	459,733.86 tons	91,998.87
					1965	386,004.13 tons	82,860.87
					1966	382,845.46 tons	72,563.51
					1967	21,636.45 tons	4,327.29
					Totals	1,949,183.96 tons	\$ 390,600.79
2233	Feb. 2, 1967	Feb. 2, 1972	Extended	20¢/ton	1967	318,718.52 tons	63,710.29
					1968	275,855.03 tons	55,170.99
					1969	366,155.79 tons	72,947.98
					1970	300,366.42 tons	60,103.29
					1971	286,809.91 tons	57,361.98
					Jan., 1972	32,202.34 tons	6,440.47
					Totals	1,580,078.01 tons	\$ 315,735.00

2233	Feb. 2, 1972	Dec. 31, 1972	Extended By Permit	22¢/ton	Feb., 1972	303,272.97 tons	66,503.51
					Dec.,		
					Totals	303,272.97 tons	\$ 66,503.51
Permit	Dec. 13, 1972	Dec. 12, 1975		32¢/ton ¹	1973	264,325.72 tons	58,072.46
					Jan., 1974	59,568.31 tons	13,105.04
					April.		
					Totals	323,894.03 tons	\$ 71,177.50
					Grand Totals	8,437,271.095 tons	\$1,404,469.79 ²

Lease number 440 and 639 were for sand and shell but only an insignificant amount of sand was produced.
 Lease number 2233 was renewed on February 9, 1972. The contract limited dredging to Tampa Bay in Hillsborough County.
 Until February 1973, Bay-Con Industries, Inc. was known as Bay Dredge & Construction Company.

¹22¢ a ton royalty to DNR; 10¢ a ton royalty to Trustees to finance an Environmental Impact Study. The royalty paid figures do not include royalties paid for this Impact Study.

²The Port Authority has received approximately \$528,840.

TABLE 3. KNOWN PRODUCTION HISTORY OF A RECENTLY ACTIVE SHELL LEASE COMPANY, BENTON AND COMPANY, INC.

Area of Lease: a. Tampa Bay in Hillsborough and Pinellas Counties

LEASE NO.	DATE LEASE ISSUED	EXPIRATION DATE	REPLACED BY	ROYALTY RATE	YEAR	REPORTED PRODUCTION	ROYALTY PAID
74	Jan. 1, 1940	Jan. 1, 1941	153	7.5¢/cu yd	1940	960 cu yd (Dec. only)	\$ 72.00
					Totals	960 cu yd	\$ 72.00
153	Jan. 1, 1941	Jan. 1, 1942, extended to Jan. 1, 1946	460	7.5¢/cu yd	1941	unknown	unknown
					1942	unknown	unknown
					1943	unknown	unknown
					1944	unknown	unknown
					1945	unknown	unknown
					Totals	unknown	unknown
460	Jan. 3, 1946	Jan. 3, 1949 extended to Feb. 7, 1962	1788	10¢/cu yd	1946	6,349 cu yd	634.87
					1947	6,554 cu yd	655.42
					1948	6,176 cu yd	617.61
					1949	19,062 cu yd	1,906.21
					1950	37,186 cu yd	3,718.64
					1951	70,455 cu yd	7,045.50
					1952	20,445 cu yd	2,044.50

TABLE 3. KNOWN PRODUCTION HISTORY OF A RECENTLY ACTIVE SHELL LEASE COMPANY, BENTON AND COMPANY, INC.
(Continued)

LEASE NO.	DATE LEASE ISSUED	EXPIRATION DATE	REPLACED BY	ROYALTY RATE	YEAR	REPORTED PRODUCTION	ROYALTY PAID
					1953	145,785 cu yd	14,578.50
					1954	110,110 cu yd	11,011.00
					1955	98,495 cu yd	9,849.50
					1956	146,385 cu yd	14,638.50
					1957	331,215 cu yd	33,121.45
					1958	330,000 cu yd	33,000.00
					1959	864,209 cu yd	86,420.90
					1960	807,041 cu yd	80,704.10
					1961	510,175 cu yd	51,017.50
					1962	63,390 cu yd	6,339.03
					Totals	3,573,032 cu yd ¹	\$ 357,303.23
1788	Feb. 1, 1962	Feb. 28, 1972	Extended One Year to Dec. 31, 1972	20¢/ton 5¢ penalty/ ton	1962	371,462.29 tons	90,105.86
					1963	530,130.84 tons	132,501.60
					1964	601,091.03 tons	152,750.23
					1965	437,415.12 tons	112,212.48
					1966	408,641.57 tons	88,545.35
					1967	242,847.34 tons	85,590.88
					1968	238,781.13 tons	70,695.28
					1969	683,041.53 tons	170,760.40
					1970	549,372.925 tons	137,342.99
					1971	849,548.785 tons	239,324.14
					Jan.- 1972	76,629.8 tons	19,157.45
					Totals	4,988,962.36 tons	\$1,298,986.71
1788	Feb. 9, 1972	Dec. 31, 1972	Replaced by permit	22¢/ton	Feb.- Dec. 1972	796,177.23 tons	175,158.98
					Totals	796,177.23 tons	\$ 175,158.98
Permits	Dec. 13, 1972	Dec. 12, 1975		32¢/ton ²	1973	522,275.385 tons	114,680.59
					Jan.- April 1974	130,085.29 tons	28,618.77
					Totals	652,360.675 tons	\$ 143,299.36 ³
					Grand Totals ⁴	12,444,432.265 tons	\$1,974,820.28

Area of Lease: b. Selected areas in Manatee County

2162	Mar. 1, 1966	Mar. 1, 1971 (cancelled Oct. 10, 1967)	Not replaced	25¢/ton	1966	0	0
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Leases number 74 and 153 were issued originally to the Benton-Manson Company, Inc., which was incorporated on May 17, 1935. The company name was changed to Benton and Company, Inc., on November 10, 1941.

An audit of the records of Benton and Company was made in October, 1960. It indicated that Benton and Company had not accounted to the State for 3,529,027 cubic yards of shell production from 1946 through 1959. The unpaid royalty due the State amounted to \$352,902.73.

In addition, royalty payments made by Benton and Company were, in some cases, several months late. The Trustees attempted to collect interest on past-due accounts and threatened to call on the lessee's bond. As a result, lease number 1788 required a \$100,000 bonus with an annual minimum royalty of \$30,000 and a \$.05 a ton penalty royalty. The company paid up all past-due accounts by the end of 1971. Lease number 1788 was renewed on February 9, 1972. The contract limited dredging to Tampa Bay within Hillsborough County.

Benton and Company was issued lease number 2162 for dredging in Manatee County. The lease was cancelled by mutual agreement between Benton and the State Cabinet with no penalty when no suitable shell deposits could be located.

The Port Authority received 50% of all royalties received after October 1, 1957. This amounted to approximately \$861,228.

¹Total reported production.

²22¢ a ton royalty to DNR; 10¢ a ton royalty to Trustees to finance environmental impact studies.

³This does not include the 10¢ per ton royalty paid to the Trustees to finance the environmental impact studies.

⁴Included production not previously reported and royalties not previously paid, and cubic yards converted to tons.

TABLE 4. KNOWN PRODUCTION HISTORY OF A RECENTLY ACTIVE SHELL LEASE COMPANY,
FORT MYERS SHELL AND DREDGING COMPANY

Area of Lease: a. Caloosahatchee River, Lee County.
Sections 27, 28, 32 and 33, T. 45 S., R. 23 E., 382 Acres.

LEASE NO.	DATE LEASE ISSUED	EXPIRATION DATE	REPLACED BY	ROYALTY RATE	YEAR	REPORTED PRODUCTION (cu yd)	ROYALTY PAID
43	June 15, 1936	June 15, 1939	111	7.5¢/cu yd	1936-38 1939 ¹ Totals	unknown 4,766 4,766	unknown \$ 357.50 357.50
111	June 15, 1939	Apr. 2, 1941	165	7.5¢/cu yd	1939 ¹ 1940 1941 Totals	----- 5,209 unknown 5,209	----- 390.70 unknown \$ 390.70
64	Feb. 2, 1940	Feb. 2, 1941	165	5¢/cu yd	1940 ² 1941 ² Totals ²	----- ----- -----	----- ----- -----

TABLE 4. KNOWN PRODUCTION HISTORY OF A RECENTLY ACTIVE SHELL LEASE COMPANY,
FORT MYERS SHELL AND DREDGING COMPANY
(Continued)

LEASE NO.	DATE LEASE ISSUED	EXPIRATION DATE	REPLACED BY	ROYALTY RATE	YEAR	REPORTED PRODUCTION (cu yd)	ROYALTY PAID
165	Apr. 2, 1941	Apr. 2, 1942 extended to 1946.	495	7.5¢/cu yd	1941	51,168.01	3,842.34
					1942	28,693.76	2,349.86
					1943	7,260.54	542.33
					1944	4,998.79	374.93
					1945	7,704.65	655.86
					1946	8,747.77	656.07
					Totals	108,573.52	\$ 8,421.39
495	Oct. 1, 1946	Oct. 1, 1956	1082	15¢/cu yd	1946	2,319.73	347.96
					1947	9,888.6	1,483.30
					1948	9,207	1,381.05
					1949	14,480.4	2,172.06
					1950	4,933.2	739.98
					1951	4,252	637.81
					1952	1,405.2	210.78
					1953	15,032	2,254.53
					1954	18,370	2,751.53
					1955	21,004	3,150.61
					1956 ³	21,888.73	3,283.31
					Totals	100,892.13	\$15,129.61
1082	Nov. 1, 1956	Oct. 31, 1961	1344	15¢/cu yd	1956	3,656	584.40
					1957	14,477	2,171.62
					1958	18,047.2	2,702.22
					1959	27,726.33	4,158.95
					1960	65,795.86	9,869.33
					1961 ⁴	-----	-----
					Totals	129,702.39	\$19,450.57
1344	May 6, 1960	May 5, 1963	1917	15¢/cu yd	1960	35,446	\$ 5,316.98
					1961	42,293	6,343.72
					1962	43,797.5	6,469.59
					1963	22,566	3,384.63
					Totals	144,102.5	\$21,514.92
1917	May 6, 1963	Jan. 31, 1967	2235	15¢/cu yd	1963	19,779	2,966.86
					1964	57,587.4	9,762.45
					1965	98,227.25	14,790.93
					1966	56,481.3	9,840.60
					1967	4,355	653.25
					Totals	236,429.95	\$38,014.09

2235	Jan. 31, 1967	Feb. 1, 1972	Not renewed	15¢/cu yd	1967	36,422	5,525.85
					1968	16,812.5	2,520.97
					1969	9,435	1,415.85
					1970	78,574.77	12,055.90
					1971	18,778	2,816.70
					Jan., 1972	0	0
					Totals	160,022.27	\$24,335.27

Area of Lease: b. Caloosahatchee River, Lee County.
Section 32, T. 45 S., R. 23 E. 67 acres.

1504	Apr. 15, 1961	Apr. 15, 1964	1684	15¢/cu yd	1961	80	\$ 12.00
					1962	11,063	1,659.45
					1963	37,261.3	5,658.76
					1964	7,019	1,088.75
					Totals	55,423.3	\$ 8,418.96
1684	Nov. 25, 1961	Jan. 31, 1965	1917	15¢/cu yd	1961	0	0
					1962	12,989.67	1,958.45
					1963	12,423	1,862.95
					1964	8,403.75	1,286.25
					1965	0	0
					Totals	33,816.42	\$ 5,107.65
1917	May 6, 1963	Jan. 31, 1967	2235	(Tabular information-Supra)			
2235	Jan. 31, 1967	Feb. 1, 1972	Not renewed	(Tabular information-Supra)			

Area of Lease: c. Charlotte Harbor, Lee County.
Sections 19, 20, 29 & 30. T. 43 S., R. 22 E. 213 acres.

1218	Nov. 26, 1958	Nov. 25, 1961	1684	15¢/cu yd	1958	0	0
					1959	51,571.25	7,875.70
					1960	9,072.87	1,360.93
					1961	43,062.00	6,479.29
					Totals	103,706.12	\$15,715.92
1684	Nov. 25, 1961	Jan. 31, 1965	1917	(Tabular information-Supra)			
1917	May 6, 1963	Jan. 31, 1967	2235	(Tabular information-Supra)			
2235	Jan. 31, 1967	Feb. 1, 1972	Not renewed	(Tabular information-Supra)			

Fort Myers Shell & Dredge: Grand Totals: 1,082,643.60 \$156,856.58

TABLE 4. KNOWN PRODUCTION HISTORY OF A RECENTLY ACTIVE SHELL LEASE COMPANY,
FORT MYERS SHELL AND DREDGING COMPANY
(Continued)

Leases number 43, 111, 165 and 495 for lease area "a" were originally issued to the Kinzie Brothers Steamship Lines of Fort Myers, Florida. Lease number 64 was originally issued to Mr. A. L. Kinzie individually and was consolidated subsequently into lease number 165.

Lease number 165 was a joint lease between the DNR and Trustees as lessors, and the Kinzie Brothers Steamship Lines as lessee. The DNR and the Trustees each received 50% of the royalties. The Trustees agreed to this arrangement because of the dredging in and around existing oyster reefs. The Trustees rescinded the arrangement when the lease expired.

Lease number 495 was assigned from the Kinzie Brothers to Mr. John H. Benton on May 31, 1952. Benton was the controlling stockholder of Benton and Company, Inc., which had shell dredging interests in Tampa Bay.

The Fort Myers Shell Company was incorporated by John Benton on May 19, 1952, but lease number 495 was retained by Benton in his individual name. In January, 1953, the Fort Myers Shell Company obtained lease number 885 for shell dredging in Tampa Bay alongside the lease already held in the name of Benton and Company (Fort Myers Shell Company, *infra*). The Fort Myers Shell Company did not hold a lease in that name in the Fort Myers area until John Benton assigned lease number 1344 to it in 1962.

Lease number 495 was renewed as lease number 1082 in Benton's name. John Benton acquired lease number 1344 in his name adding an additional dredge area in the general vicinity of the dredge area for lease number 1082. Upon expiration of lease number 1082, that lease area was renewed and consolidated onto lease number 1344.

On May 31, 1962, John Benton assigned lease number 1344 to the Fort Myers Shell Company in which he was the controlling stockholder. The lease area of lease number 1344 was renewed by the Fort Myers Dredging Company as lease number 1917.

Lease number 1218 in dredge area "c" was originally issued to the Fort Myers Dredging Company which was incorporated on December 21, 1953, by D. K. O'Mahony. On March 16, 1960, O'Mahony incorporated another shell dredging company called the Edison Shell Company which he operated along with the Fort Myers Dredging Company. When lease number 1218 expired, it was renewed in the same lease area by O'Mahony in the name of the Edison Shell Company as lease number 1684. Fort Myers Dredging Company had no lease as an asset as a result.

Lease number 1504 in dredging area "b" was originally issued to the Edison Shell Company. Upon expiration, the lease area was renewed and consolidated into lease number 1684 as an asset of the Edison Shell Company.

In 1964, during merger negotiations, the Edison Shell Company assigned its interests in lease number 1684 to the Fort Myers Dredging Company. On October 1, 1964, the Fort Myers Shell Company under Benton and the Fort Myers Dredging Company under O'Mahony merged. Lease number 1917 from Fort Myers Shell and lease number 1684 from Fort Myers Dredging were brought into the new corporation. The new corporation was called the Fort Myers Dredging Company and was administered by a 5-man board of directors with Benton and O'Mahony having equal representation.

Lease number 1684 expired on January 31, 1965. The dredge area was renewed and consolidated into lease number 1917. Lease number 1917 operated under dredge areas "a", "b" and "c" in Lee County. Lease number 1917 was later renewed as lease number 2235.

On December 16, 1965, John Benton sold his interest in the Fort Myers Dredging Company to O'Mahony. Benton then was no longer connected with this corporation or shell dredging in the Fort Myers area. Benton contracted to remain out of the shell dredging business within a radius of 75 miles of Fort Myers for 10 years. Benton concentrated his shell dredging efforts in the Tampa Bay area. Shortly thereafter, O'Mahony changed the company name to the Fort Myers Shell and Dredging Company, Inc.

The dredge permit from the U. S. Army Corps of Engineers expired in October, 1971. All dredging operations stopped while negotiations for the renewal of the Corps permit and a renewal of the lease began. Neither the permit nor the lease was issued or renewed.

¹Production and royalty figures for leases number 43 and 111 were recorded together in 1939.

²Production and royalty figures for leases number 64 and 111 were recorded together in 1941.

³Production and royalty figures for leases number 495 and 885 were recorded together in 1956.

⁴Production and royalty figures for leases number 1082 and 1344 were recorded together in 1961.

TABLE 5. KNOWN PRODUCTION HISTORY OF A RECENTLY ACTIVE SHELL LEASE COMPANY,
RADCLIFF MATERIALS COMPANY.

Area of Lease: All sovereignty lands west of the east boundary of Wakulla County. Exclusive.

LEASE NO.	DATE LEASE ISSUED	EXPIRATION DATE	REPLACED BY	ROYALTY RATE	YEAR	REPORTED PRODUCTION	ROYALTY PAID
673	Oct. 28, 1949	Oct. 28, 1958	1207	10¢/cu yd	1949	0	\$ 0
					1950	4,970 cu yd	497.05
					1951- 1958	0	0
					Totals	4,970 cu yd	\$ 497.05
753	Oct. 10, 1950	Feb. 7, 1962	1718	10¢/cu yd	1950	104,971 cu yd	10,497.10
					1951	3,391 cu yd	339.08
					1952	62,362 cu yd	6,236.21
					1953	451,659 cu yd	45,165.93
					1954	582,582 cu yd	58,258.22
					1955	97,581 cu yd	9,758.05
					1956	557,454 cu yd	55,745.37
					1957	536,179 cu yd	53,617.89
					1958	257,455.6 cu yd	25,745.56
					1959	367,727.3 cu yd	36,772.73
					1960	457,621.4 cu yd	45,762.14
					1961	417,651 cu yd	41,765.11
					Totals	3,896,634.3 cu yd	\$ 389,663.39

TABLE 5. KNOWN PRODUCTION HISTORY OF A RECENTLY ACTIVE SHELL LEASE COMPANY,
RADCLIFF MATERIALS COMPANY.
(Continued)

LEASE NO.	DATE LEASE ISSUED	EXPIRATION DATE	REPLACED BY	ROYALTY RATE	YEAR	REPORTED PRODUCTION	ROYALTY PAID
1207	Oct. 28, 1958	Oct. 28, 1961	1718	15¢/cu yd	1958-1961 Totals	0 0	1,260.00 \$ 1,260.00 ¹
1718	Feb. 5, 1962	Feb. 4, 1967 extended to Feb. 4, 1972	Not replaced	26.6¢/ on	1962 1963 1964 1965 1966 1967 1968 ² 1969 1970 ³ 1971 ³ Jan., 1972 Totals	300,972 tons 441,812.17 tons 512,858.38 tons 362,542.91 tons 516,843.40 tons 508,019.53 tons 299,293.70 tons 405,977.23 tons 201,683.20 tons 4,032.26 tons 0 3,554,034.78 tons ⁵	80,239.12 117,587.13 136,728.06 96,652.61 136,990.69 135,516.12 78,991.88 108,233.53 54,072.95 40,006.30 ⁴ 0 \$ 985,018.39
Grand Totals						6,480,238.005 tons	\$1,376,438.83

Leases number 673 and 1207 concerned dredging in the water bottoms of Franklin and Wakulla Counties. Lease number 753 was for dredging in Gulf County and west to the Alabama-Florida boundary line. All were replaced by lease 1718.

The lease areas in Wakulla and Franklin Counties were not dredged to any great extent. Apparently, it would not be profitable to dredge in those counties. Also, it could be difficult to obtain permits and avoid live oyster reefs there.

Lease number 673, 753 and 1207 were issued to the Radcliff Gravel Company. The company name changed to the Radcliff Materials Company on November 1, 1960, when Radcliff Gravel merged with the Bay Towing and Dredging Company. Radcliff Materials Company is a subsidiary of Southern Industries Corporation.

In November, 1968, there was a verbal agreement between Radcliff and the State, and the Walton County Commission, limiting the dredge areas in Choctawhatchee Bay. Conservation interests were desirous of protecting certain nursery areas.

Lease number 1718 terminated in February, 1972. It has not been renewed.

¹There was no production under lease number 1207. Radcliff paid the \$35.00 monthly minimum throughout the three-year term of the lease.

²Production and royalty records for 2 months are missing.

³Radcliff temporarily terminated dredging operations in Florida in 1970 citing the cost of operating in Florida. The sales of shell and royalties

paid represent the sales from accumulated stockpiled shell.

⁴Radcliff paid the minimum royalty of \$40,000 for the period from February 5, 1971, through February 4, 1972. The \$6.30 represents the royalty due for January, 1971.

⁵Production figures expressed in cubic yards were converted to tons.

TABLE 6. KNOWN PRODUCTION HISTORY OF LONG INACTIVE SHELL LEASE COMPANIES

LESSEE	LEASE NO.	INCLUSIVE DATES OF LEASE	REPLACED BY	ROYALTY RATE	YEAR	REPORTED PRODUCTION (cu yd)	ROYALTY PAID
Bradenton Dredging & Shell Company	36	Oct. 23, 1931 to Sept. 30, 1936	144	5¢/cu yd	1931	unknown	unknown
					1932	unknown	\$ 147.25 ¹
					1933	unknown	182.00 ¹
					1934	unknown	297.50 ¹
					1935	unknown	127.70 ¹
					1936	0	0 ²
					Totals	unknown	\$ 754.45
	144	Sept. 30, 1936 to Sept. 30, 1939	61	5¢/cu yd	1936	7,757	387.85 ²
					1937	16,903	845.15
					1938	17,930	896.48
					1939	5,788	289.40
					Totals	48,378	\$ 2,418.88
	61	Sept. 30, 1939 to Sept. 30, 1940, extended to Sept. 30, 1961	1585 applied for	7.5¢/cu yd	1939	4,856	364.20
					1940	6,280	497.10
					1941	1,600	120.00
					1942	1,467	110.00 ³
					1943	unknown	110.00 ³
					1944	unknown	110.00 ³
					1945	2,260	226.00
				10¢/cu yd	1946	13,370	1,337.00
					1947	22,600	2,260.00
					1948	9,320	932.00
					1949	4,032	403.00
					1950	9,406	940.60
					1951	7,970	797.00
					1952	8,990	899.00
					1953	17,623	1,762.30
					1954	35,521	3,552.10
					1955	40,592	4,059.22
					1956	36,165	3,616.50
					1957	28,992	2,899.20
					1958	268,974	25,671.90
					1959	30,887.1	3,088.71

TABLE 6. KNOWN PRODUCTION HISTORY OF LONG INACTIVE SHELL LEASE COMPANIES
(Continued)

LESSEE	LEASE NO.	INCLUSIVE DATES OF LEASE	REPLACED BY	ROYALTY RATE	YEAR	REPORTED PRODUCTION (cu yd)	ROYALTY PAID
					1960	24,821.8	2,482.18
					1961	11,978.6	1,197.06
					Totals	587,705.5	\$57,215.27
	1585	—	—	15¢/cu yd	1961	11,783	1,767.45
	Not				1962	3,387	508.05
	issued				Totals	15,170	\$ 2,275.50
					Grand Totals	651,253.5	\$62,664.10

Lease number 1585 was applied for on July 12, 1961. The application was assigned number 1585 and the lease was approved by the Trustees on January 9, 1962. The lease was never issued and the application was withdrawn on March 10, 1962, by the company. Bradenton Dredging and Shell Company abandoned shell dredging after over 30 years operating in the Manatee River, Manatee County.

¹Royalty and minimum royalty combined.

²Leases number 36 and 144 were considered one lease by the Trustees. The 1936 figures are reported together.

³The production and royalty records for lease number 61 in 1942, 1943, and 1944 are confusing. The records state that the royalty received for the three years was \$110.00 each year. There are no production reports available for 1943 and 1944 while the 1942 production records indicate that 1,467 cubic yards were produced.

Caldwell, F. P.	680	Dec. 28, 1949 to Dec. 28, 1951, extended to 1956	Not Replaced	10¢/cu yd	1950	3,241	324.10
					1951	5,331	533.10
					1952	2,423	242.35
					1953	1,200	120.00
					Grand Totals	12,195	\$ 1,219.55

Dredging was conducted in Long Bayou in Pinellas County, Florida.

City of Jacksonville Beach	541	July 9, 1947 to July 7, 1948	571	10¢/cu yd	1947	1,845	184.50
					Totals	1,845	\$ 184.50
	571	Jan. 31, 1948 to Jan. 31, 1949	Not Replaced	10¢/cu yd	1948	1,450	145.00
					Totals	1,450	\$ 145.00
					Grand Totals	3,295	\$ 329.50

These leases contracted for the dredging of coquina shell from the Atlantic Ocean off the City of Jacksonville Beach. The lessee dredged the maximum contracted for in each lease.

Cox, D. F.	1070	Oct. 9, 1956	Not Replaced	15¢/cu yd	1956	6,015	\$ 902.25
		to			1957	9,175.6	1,376.34
		Oct. 9, 1958			1958	unknown	unknown
					Grand Totals	15,190.6	\$ 2,278.59

Dredging was conducted in Sections 30, 31 and 32, Township 25 South, Range 16 East of Pasco County.

Duval Engineering Company	37	Oct. 31, 1937	158	7.5¢/cu yd	1937	unknown	unknown
		to			1938	unknown	unknown
		Oct. 31, 1940			1939	41,412	3,105.93
					1940	37,562	2,817.20
				Totals	78,974	\$ 5,923.13	
	158	Mar. 4, 1941	241	7.5¢/cu yd	1941	43,363	3,252.23
		to			1942	73,217	5,491.29
		Mar. 4, 1944			1943	51,428	3,857.11
					1944	67,299	5,047.40
				Totals	235,307	\$17,648.03	
	241	All Data unknown					
	426	Oct. 1, 1945	Not Replaced	7.5¢/cu yd	1945	12,320	924.05
to		1946			17,066	1,194.59	
Oct. 1, 1946		Totals			29,386	\$ 2,118.64	
			Grand Totals	343,667	\$25,689.80		

The Duval Engineering Company dredged state-owned bottoms in the St. Johns River. The company continues in the dredging business but it owns the marshland where dredging takes place today.

East Bay Enterprises, Inc..	2098	Feb. 16, 1965	Not Replaced	20¢/ton	1965 to	0	12,500.00
		to			1970,		
		Jan. 2, 1968, extended to Feb. 16, 1970			Inclusive Grand Totals	0	\$12,500.00

The lease contracted for dredging in Tampa Bay in Hillsborough, Pinellas and Manatee Counties. The minimum annual royalty was \$2,500.00. After the lease was issued, the company was involved in litigation over mineral rights and East Bay did not get into production. The minimum annual royalty was paid each year until the lease expired.

Edison Shell Co.	1503	Apr. 15, 1961	Not Replaced	15¢/cu yd			
		to Apr. 15, 1964					

This lease was contested by conservation interests protesting the proposed dredging in Sarasota County. The controversy was resolved jointly by the Cabinet and Edison by mutually agreeing to cancel the lease. The lease was cancelled in May, 1961. It was reinstated in July, 1961 and cancelled again on October 2, 1961. No dredging took place and no royalties were paid.

See Fort Myers Shell and Dredging Company (supra) for more information concerning the Edison Shell Company.

Imbler, Jack	822	Sept. 19, 1951 to Sept. 19, 1953	Not Replaced
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Production and royalty records are unavailable for this lease. The area to be dredged was in Boca Ciega Bay in Pinellas County.

Madiera Marine, Inc.	890	Mar. 3, 1953 to Mar. 3, 1955	Not Replaced
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Production and royalty records are unavailable for this lease. The contract called for dredging in Pinellas County.

Martin Marietta Corp.	No Number	Oct. 30, 1962 to Dec. 31, 1963	—		0	5,000.00
				Grand Totals		\$ 5,000.00

A dead shell lease for Martin Marietta Corporation was drawn up by the DNR with an effective date of October 30, 1962. Although it was fully executed by both parties, the lease was never assigned a number and never officially issued.

The application was for a five year lease for dredging in Charlotte Harbor, Pine Island Sound, San Carlos Bay, the Caloosahatchee River, Lake Okeechobee north of 27 degrees north latitude, and a tract near Cape Romano south of 27 degrees north latitude. The proposed lease was not to interfere with existing leases within the proposed area.

Contained in the original lease was a provision granting the lessee the option to cancel the agreement within 120 days of the effective date. Martin Marietta paid \$5,000 for this option and would have had to pay an additional \$5,000 to activate the lease. An additional condition was that the corporation would construct or acquire a cement plant in Florida within three years from the date of the activation of the lease.

Subsequent litigation with the Coastal Petroleum Company over certain mineral rights involved, delayed execution of the lease. The option period was extended until December 31, 1963 by an agreement between the parties dated August 20, 1963.

By letter to Governor Farris Bryant dated December 23, 1963, Martin Marietta Corporation indicated its desire to have the lease application cancelled. No shell was ever dredged under the lease application.

B.B. McCormick & Sons, Inc.	501	Sept. 15, 1946 to Sept. 15, 1961	Not Replaced
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Production and royalty records are unavailable for this lease. This company dredged coquina shell and sand from the Atlantic Ocean off the beaches of Duval County.

Murry, W. J.	484	July 24, 1946 to July 24, 1947	Not Replaced
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Production and royalty records are unavailable for this lease. The contract called for shell dredging in Nassau County.

TABLE 6. KNOWN PRODUCTION HISTORY OF LONG INACTIVE SHELL LEASE COMPANIES

(Continued)

20

LESSEE	LEASE NO.	INCLUSIVE DATES OF LEASE	REPLACED BY	ROYALTY RATE	YEAR	REPORTED PRODUCTION (cu yd)	ROYALTY PAID
Muscatine Glass Works Company	335	Sept. 16, 1943 to unknown date	Not Replaced				
The lease contract called for the dredging of mussel shells from the Dead Lakes in Gulf County.							
Muscatine Glass Works Company	418	Dates Unknown	Not Replaced				
Production and royalty records are unavailable for this separate Muscatine lease. The contract called for the dredging of mussel shells from the Ocklockonee River in Wakulla and Franklin Counties.							
Paasche, H. A.	598	Mar. 1, 1948 to Mar. 1, 1949	Not Replaced				
All records for this lease are unavailable. The contract called for dredging in Nassau Sound in Nassau County.							
Pollak, H. E.	1050	June 11, 1956 to June 11, 1958	Not Replaced	10¢/cu yd	1956 1957 Grand Totals	200 450 650	30.00 45.00 \$ 75.00
Pollak dredged shell from Turkey Creek in Brevard County. The lease was cancelled by the Cabinet in November, 1957.							
Port Richey Shell Company	612	Sept. 20, 1948 to Sept. 20, 1951	Not Replaced	10¢/cu yd	1948 1949 Grand Totals	4,140 9,876 14,016	414.00 987.00 \$ 1,401.60
The company dredged shell in the Pithlochascotha River in Pasco County. The lease was cancelled November 30, 1949 because the company failed to live up to the lease agreement.							

Ritter, E. E.	732	July 14, 1950 to July 14, 1952	Not Replaced	10¢/cu yd	1950 1951 1952 Grand Totals	2,698 4,407 376 7,481	279.80 460.70 57.60 \$ 798.10
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The contract called for the dredging of shell in the Pithlochascotha River in Pasco County.

Sarasota Shell and Dredging Company	978	Jan. 26, 1955 to Jan. 26, 1957	Not Replaced	10¢/cu yd	1956 1957 Grand Totals	32,793 600 33,393	3,279.00 60.00 \$ 3,339.00
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Shell was dredged from the waters of Sarasota County.

Schmarji, John	860	Sept. 15, 1952 to Sept. 15, 1957	Not Replaced				
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Production and royalty records are unavailable. The dredging operation was concerned with the dredging of mussel shell from the Chipola and Ochlocknee Rivers, and the Dead Lakes in Northwest Florida. The lease was cancelled on February 26, 1957 by the Trustees on the failure of the lessee to comply with the lease contract.

Smith Engineering and Construction Co.	499	Sept. 9, 1946 to Sept. 19, 1950	Not Replaced	10¢/cu yd	1946 1947 1948 1949 1950 1951 Grand Totals	8,333 44,440 50,000 59,861 29,167 13,750 205,551	833.34 4,443.96 5,000.00 5,986.13 2,916.69 1,375.02 \$20,555.40
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The lease contract called for shell dredging from the east boundary of Gulf County to the Florida-Alabama boundary line.

Radcliff Gravel Company obtained an exclusive shell lease (number 753) on October 10, 1950 by competitive bidding, covering the same area as lease number 499. Smith Engineering and Construction got out of the shell dredging business in northwest Florida at that time. (See Radcliff Materials Company, supra).

Stanley Guson, Inc..	239	Jan. 8, 1942 to Jan. 8, 1947	Not Replaced				
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This operation was primarily concerned with the dredging of mussel shell from the Dead Lakes of Gulf County. The royalty and production records are unavailable.

TABLE 6. KNOWN PRODUCTION HISTORY OF LONG INACTIVE SHELL LEASE COMPANIES

(Continued)

22

LESSEE	LEASE NO.	INCLUSIVE DATES OF LEASE	REPLACED BY	ROYALTY RATE	YEAR	REPORTED PRODUCTION (cu yd)	ROYALTY PAID
Stewart, R. B.	131	Nov. 20, 1940 to Nov. 20, 1941	Not Replaced				
The records of production and royalty are unavailable. The lease called for dredging in the Caloosahatchee River in Lee County.							
Stevens and Company	353	July 21, 1944 to July 21, 1946	Not Replaced	7.5¢/cu yd	1944 1945 1946 Grand Totals	26,450 14,317 11,559 52,326	1,983.76 1,073.72 866.94 \$ 3,924.44
The contract called for dredging in West Bay in Bay County.							
E. Turner and Sons Company	617	Sept. 23, 1948 to Sept. 23, 1949	Not Replaced				
Production and royalty records unavailable.							

TABLE 7. SUMMARY OF KNOWN ANNUAL PRODUCTION AND ROYALTY PAYMENTS, 1932-1974.

LEASE NO.	LESSEE ¹	PRODUCTION ²		ROYALTY PAID
		<u>1932</u>		
36	Bradenton Dredge & Shell Company	Unknown		\$ 147.25
		<u>1933</u>		
36	Bradenton Dredge & Shell Company	Unknown		\$ 182.00
		<u>1934</u>		
36	Bradenton Dredge & Shell Company	Unknown		\$ 297.50
		<u>1935</u>		
36	Bradenton Dredge & Shell Company	Unknown		\$ 127.70
		<u>1936</u>		
144	Bradenton Dredge & Shell Company	7,757	cu yd	\$ 387.85
		<u>1937</u>		
144	Bradenton Dredge & Shell Company	16,903	cu yd	\$ 845.15
		<u>1938</u>		
144	Bradenton Dredge & Shell Company	17,930	cu yd	\$ 896.48
		<u>1939</u>		
43	Kinzie Brothers Company	4,766	cu yd	\$ 357.50
144	Bradenton Dredge & Shell Company	5,788	cu yd	289.40
61	Bradenton Dredge & Shell Company	4,856	cu yd	364.20
37	Duval Engineering Company	41,412	cu yd	3,105.93
		<u>1940</u>		
74	Benton-Manson Company	960	cu yd	\$ 72.00
111	Kinzie Brothers Company	5,209	cu yd	390.70
61	Bradenton Dredge & Shell Company	6,280	cu yd	497.10
37	Duval Engineering Company	37,562	cu yd	2,817.20
		<u>1941</u>		
165	Kinzie Brothers Company	51,168.01	cu yd	\$ 3,842.34
61	Bradenton Dredge & Shell Company	1,600	cu yd	120.00
158	Duval Engineering Company	43,363	cu yd	3,252.23
		<u>1942</u>		
165	Kinzie Brothers Company	28,693.76	cu yd	\$ 2,349.86
61	Bradenton Dredge & Shell Company	1,467	cu yd	110.00
158	Duval Engineering Company	73,217	cu yd	5,491.29
		<u>1943</u>		
165	Kinzie Brothers Company	7,260.54	cu yd	\$ 542.33
61	Bradenton Dredge & Shell Company	Unknown		110.00
158	Duval Engineering Company	51,428	cu yd	3,857.11
		<u>1944</u>		
165	Kinzie Brothers Company	4,998.79	cu yd	\$ 374.93
61	Bradenton Dredge & Shell Company	Unknown		110.00
158	Duval Engineering Company	67,299	cu yd	5,047.40
353	Stevens & Company	26,450	cu yd	1,983.76
		<u>1945</u>		
165	Kinzie Brothers Company	7,704.65	cu yd	\$ 655.86
61	Bradenton Dredge & Shell Company	2,260	cu yd	226.00
426	Duval Engineering Company	12,320	cu yd	924.05
353	Stevens & Company	14,317	cu yd	1,073.72

TABLE 7. SUMMARY OF KNOWN ANNUAL PRODUCTION AND ROYALTY PAYMENTS, 1932-1974.
(Continued)

		<u>1946</u>		
440	Bay Dredging Company	109,615	cu yd	\$ 8,224.10
460 ³	Benton & Company	6,349	cu yd	634.87
165	Kinzie Brothers Company	8,474.77	cu yd	656.07
495	Kinzie Brothers Company	2,319.73	cu yd	347.96
61	Bradenton Dredge & Shell Company	13,370	cu yd	1,337.00
426	Duval Engineering Company	17,066	cu yd	1,194.59
499	Smith Engineering	8,333	cu yd	833.34
353	Stevens & Company	11,559	cu yd	866.94
		<u>1947</u>		
440	Bay Dredging Company	184,157	cu yd	\$ 13,811.77
460 ³	Benton & Company	6,554	cu yd	655.42
495	Kinzie Brothers Company	9,888.6	cu yd	1,483.30
61	Bradenton Dredge & Shell Company	22,600	cu yd	2,260.00
541	City of Jacksonville Beach	1,845	cu yd	184.50
499	Smith Engineering	44,440	cu yd	4,443.96
		<u>1948</u>		
440	Bay Dredging	105,443.5	cu yd	\$ 7,891.99
460 ³	Benton & Company	6,176	cu yd	617.61
495	Kinzie Brothers Company	9,207	cu yd	1,381.05
61	Bradenton Dredge & Shell Company	9,320	cu yd	932.00
571	City of Jacksonville Beach	1,450	cu yd	145.00
612	Port Richey Shell Company	4,140	cu yd	414.00
499	Smith Engineering	50,000	cu yd	5,000.00
		<u>1949</u>		
440	Bay Dredging Company	24,237	cu yd	\$ 2,443.90
639	Bay Dredging Company	90,815	cu yd	8,729.03
460 ³	Benton & Company	19,062	cu yd	1,906.21
495	Kinzie Brothers Company	14,480.4	cu yd	2,172.06
61	Bradenton Dredge & Shell Co.	4,032	cu yd	403.00
663	Huffman, E. C.	450	cu yd	45.00
612	Port Richey Shell Company	4,140	cu yd	414.00
499	Smith Engineering	59,861	cu yd	5,986.13
		<u>1950</u>		
639	Bay Dredging Company	169,713	cu yd	\$ 16,971.30
460 ³	Benton and Company	37,186	cu yd	3,718.64
495	Kinzie Brothers Company	4,933.2	cu yd	739.98
673	Radcliff Gravel Company	4,970	cu yd	497.05
753	Radcliff Gravel Company	104,971	cu yd	10,497.10
61	Bradenton Dredge & Shell Co.	9,406	cu yd	940.60
663	Huffman, E. C.	900	cu yd	90.00
680	Caldwell, F. P.	3,241	cu yd	324.10
732	Ritter, E. E.	2,698	cu yd	279.80
499	Smith Engineering	29,167	cu yd	2,916.69
		<u>1951</u>		
639	Bay Dredging Company	197,960	cu yd	\$ 19,796.00
460 ³	Benton and Company	70,455	cu yd	7,045.50
495	Kinzie Brothers Company	4,252	cu yd	637.81
753	Radcliff Gravel Company	3,391	cu yd	339.08
61	Bradenton Dredge & Shell Co.	7,970	cu yd	797.00
680	Caldwell, F. P.	5,331	cu yd	533.10
732	Ritter, E. E.	4,407	cu yd	460.70
499	Smith Engineering	13,750	cu yd	1,375.02

		<u>1952</u>		
639	Bay Dredging Company	245,653	cu yd	\$ 24,565.30
460 ³	Benton & Company	20,445	cu yd	2,044.50
495	Benton, John	1,405.2	cu yd	210.78
753	Radcliff Gravel Company	62,362	cu yd	6,236.21
61	Bradenton Dredge & Shell Co.	8,990	cu yd	899.00
680	Caldwell, F. P.	2,423	cu yd	242.35
732	Ritter, E. E.	376	cu yd	57.60
		<u>1953</u>		
639	Bay Dredging Company	347,072	cu yd	\$ 34,707.20
460 ³	Benton and Company	145,785	cu yd	14,578.50
495	Benton, John	15,032	cu yd	2,254.53
753	Radcliff Gravel Company	451,659	cu yd	45,165.93
61	Bradenton Dredge & Shell Co.	17,623	cu yd	1,762.30
680	Caldwell, F. P.	1,200	cu yd	120.00
886	Ferguson, W. F.	712	cu yd	180.00
885	Fort Myers Shell Company	0	cu yd	180.00
		<u>1954</u>		
639	Bay Dredging Company	424,886	cu yd	\$ 42,488.60
460 ³	Benton and Company	110,110	cu yd	11,011.00
495	Benton, John	18,370	cu yd	2,751.53
753	Radcliff Materials Company	582,582	cu yd	58,258.22
61	Bradenton Dredge & Shell Co.	35,521	cu yd	3,552.10
885	Fort Myers Shell Company	0	cu yd	180.00
		<u>1955</u>		
639	Bay Dredging Company	571,646	cu yd	\$ 57,164.60
460 ³	Benton and Company	98,495	cu yd	9,849.50
495	Benton, John	21,004	cu yd	3,150.61
753	Radcliff Gravel Company	97,581	cu yd	9,758.05
61	Bradenton Dredge & Shell Co.	40,592	cu yd	4,059.22
		<u>1956</u>		
639	Bay Dredging Company	621,654	cu yd	\$ 62,165.40
460 ³	Benton and Company	146,385	cu yd	14,638.50
495	Benton, John	21,888.73	cu yd	3,283.31
1082	Benton, John	3,656	cu yd	584.40
753	Radcliff Gravel Company	557,454	cu yd	55,745.37
61	Bradenton Dredge & Shell Co.	36,165	cu yd	3,616.50
1070	Cox, Dean	6,015	cu yd	902.25
1050	Pollak, Harry	200	cu yd	30.00
978	Sarasota Shell Company	32,793	cu yd	3,279.00
		<u>1957</u>		
639	Bay Dredging Company	541,547	cu yd	\$ 54,154.70
460 ³	Benton and Company	331,215	cu yd	33,121.45
1082	Benton, John	14,477	cu yd	2,171.62
753	Radcliff Gravel Company	536,179	cu yd	53,617.89
61	Bradenton Dredge & Shell Co.	28,992	cu yd	2,899.20
1070	Cox, Dean	9,176.6	cu yd	1,376.34
1050	Pollak, Harry	450	cu yd	45.00
978	Sarasota Shell Company	600	cu yd	60.00
		<u>1958</u>		
639	Bay Dredging Company	496,071	cu yd	\$ 49,607.10
460 ³	Benton and Company	330,000	cu yd	33,000.00
1082	Benton, John	18,047.2	cu yd	2,702.22
753	Radcliff Gravel Company	257,455.6	cu yd	25,745.56
1207	Radcliff Gravel Company	0	cu yd	70.00
61	Bradenton Dredge & Shell Co.	268,974	cu yd	25,671.90

TABLE 7. SUMMARY OF KNOWN ANNUAL PRODUCTION AND ROYALTY PAYMENTS, 1932-1974.
(Continued)

		<u>1959</u>		
639	Bay Dredging Company	575,965	cu yd	\$ 57,596.50
460 ³	Benton and Company	864,209	cu yd	86,420.90
1082	Benton, John	27,726.33	cu yd	4,158.95
1218	Fort Myers Dredging Co.	51,571.25	cu yd	7,875.70
753	Radcliff Gravel Company	367,727.3	cu yd	36,772.73
1207	Radcliff Gravel Company	0	cu yd	420.00
61	Bradenton Dredge & Shell Co	30,887.1	cu yd	3,088.71
		<u>1960</u>		
639	Bay Dredging Company	521,370	cu yd	\$ 52,137.01
460	Benton and Company	807,041	cu yd	80,704.10
1082	Benton, John	65,795.86	cu yd	9,869.33
1344	Benton, John	35,446	cu yd	5,316.98
1218	Fort Myers Dredging Co.	9,072.87	cu yd	1,360.93
753	Radcliff Materials Company	457,621.4	cu yd	45,762.14
1207	Radcliff Materials Company	0	cu yd	420.00
61	Bradenton Dredge & Shell Co.	24,821.8	cu yd	2,482.18
		<u>1961</u>		
639	Bay Dredging Company	491,094	cu yd	\$ 46,109.40
460	Benton and Company	510,175	cu yd	51,017.50
1344	Benton, John	42,293	cu yd	6,343.72
1504	Edison Shell Company	80	cu yd	12.00
1218	Fort Myers Dredging Co.	43,062	cu yd	6,479.29
753	Radcliff Materials Company	417,651	cu yd	41,765.11
1207	Radcliff Materials Company	0	cu yd	350.00
61	Bradenton Dredge & Shell Co.	11,978.6	cu yd	1,197.06
1585	Bradenton Dredge & Shell Co	11,783	cu yd	1,767.45
		<u>1962</u>		
639	Bay Dredging Company	18,891	cu yd	\$ 1,889.10
1703	Bay Dredging Company	306,024.3	tons	60,260.31
460	Benton and Company	63,390	cu yd	6,339.03
1788	Benton and Company	371,462.29	tons	90,105.86
1344	Fort Myers Shell Company	43,797.5	cu yd	6,469.59
1504	Edison Shell Company	11,063	cu yd	1,659.45
1684	Edison Shell Company	12,989.67	cu yd	1,958.45
1718	Radcliff Materials Company	300,972	tons	80,239.12
1585	Bradenton Dredge & Shell Co.	3,387	cu yd	508.05
		<u>1963</u>		
1703	Bay Dredging Company	392,939.76	tons	\$ 78,589.94
1788	Benton and Company	530,130.84	tons	132,501.60
1344	Fort Myers Shell Co.	22,566	cu yd	3,384.63
1917	Fort Myers Shell Co.	19,779	cu yd	2,966.86
1504	Edison Shell Company	37,261.3	cu yd	5,658.76
1684	Edison Shell Company	12,423	cu yd	1,862.95
1718	Radcliff Materials Company	441,812.17	tons	117,587.13
	Martin-Marietta Corporation	0		5,000.00
		<u>1964</u>		
1703	Bay Dredging Company	459,733.86	tons	\$ 91,998.87
1788	Benton and Company	601,091.03	tons	152,750.28
1917	Fort Myers Dredging Co.	57,587.4	cu yd	9,762.45
1504	Fort Myers Dredging Co.	7,019	cu yd	1,088.75
1684	Fort Myers Dredging Co.	8,403.75	cu yd	1,286.25
1718	Radcliff Materials Company	512,858.88	tons	136,728.06

		<u>1965</u>		
1703	Bay Dredging Company	386,004.13	tons	\$ 82,860.87
1788	Benton and Company	437,415.12	tons	112,212.48
1917	Fort Myers Dredging Co.	98,227.25	cu yd	14,790.93
1718	Radcliff Materials Company	362,542.91	tons	96,652.61
		<u>1966</u>		
1703	Bay Dredging Company	382,845.46	tons	\$ 72,563.51
1788	Benton and Company	408,641.57	tons	88,545.35
1917	Fort Myers Shell & Dredging	56,481.3	cu yd	9,840.60
1718	Radcliff Materials Company	516,843.40	tons	136,990.69
2098	East Bay Enterprises	0		2,500.00
		<u>1967</u>		
1703	Bay Dredging Company	21,636.45	tons	\$ 4,327.29
2233	Bay Dredging Company	318,718.52	tons	63,710.29
1788	Benton and Company	242,847.34	tons	85,590.88
1917	Fort Myers Shell & Dredging	4,355	cu yd	653.25
2235	Fort Myers Shell & Dredging	36,422	cu yd	5,525.85
1718	Radcliff Materials Company	508,019.53	tons	135,516.12
2098	East Bay Enterprises	0		2,500.00
		<u>1968</u>		
2233	Bay Dredging Company	225,855.03	tons	\$ 55,170.99
1788	Benton and Company	238,781.13	tons	70,695.28
2235	Fort Myers Shell & Dredging	16,812.5	cu yd	2,520.97
1718	Radcliff Materials Company	299,293.70	tons	78,991.88
2098	East Bay Enterprises	0		2,500.00
		<u>1969</u>		
2233	Bay Dredging Company	366,155.79	tons	\$ 72,947.98
1788	Benton and Company	683,041.53	tons	170,760.40
2235	Fort Myers Shell & Dredging	9,435	cu yd	1,415.85
1718	Radcliff Materials Company	405,977.23	tons	108,233.53
2098	East Bay Enterprises	0		2,500.00
		<u>1970</u>		
2233	Bay Dredging Company	300,366.42	tons	\$ 60,103.29
1788	Benton and Company	549,372.925	tons	137,342.99
2235	Fort Myers Shell & Dredging	78,574.77	cu yd	12,055.90
1718	Radcliffe Materials Company	201,683.2	tons	54,072.95
2098	East Bay Enterprises	0		2,500.00
		<u>1971</u>		
2233	Bay Dredging Company	286,809.91	tons	\$ 57,361.98
1788	Benton and Company	849,548.785	tons	239,324.14
2235	Fort Myers Shell & Dredging	18,788	cu yd	2,816.70
1718	Radcliffe Materials Company	4,032.26	tons	40,006.30 ⁴
		<u>1972</u>		
2233	Bay Dredging Company	335,475.31	tons	72,943.98
1788	Benton and Company	872,807.03	tons	194,316.43
2235	Fort Myers Shell & Dredging	0		0
1718	Radcliffe Materials Company	0		0
		<u>1973</u>		
Permit	Bay-Con Industries	264,325.72	tons	\$ 58,072.46 ⁵
Permit	Benton and Company	522,275.385	tons	114,680.59 ⁵
		<u>Jan. - April, 1974</u>		
Permit	Bay-Con Industries	59,568.31	tons	\$ 13,105.04 ⁵
Permit	Benton and Company	130,085.29	tons	28,618.77 ⁵

¹ Leases were transferred during some years. The listed lessee represents the lessee of record at the end of a particular year.

TABLE 7. SUMMARY OF KNOWN ANNUAL PRODUCTION AND ROYALTY PAYMENTS, 1932-1974.
(Continued)

²Production through 1961 was in cubic yards. Most production was recorded in tons after 1961.

³Benton and Company did not report 3,529,027 cubic yards of production from 1946 through 1959 under lease number 460. This is not reflected in the figures of this table. It is included in the grand total figures in Table 5.

⁴Radcliffe Materials Company paid the \$40,000 minimum royalty for the period February, 1971 through February, 1972.

⁵This does not include the 10¢ per ton royalty paid to the Trustees to finance the environmental impact studies.

TABLE 8. TOTAL KNOWN SHELL PRODUCTION AND ROYALTY PAID, 1932-1974

YEAR	NO. OF LEASES	PRODUCTION	ROYALTY PAID
1932	1	Unknown	\$ 147.25
1933	1	Unknown	182.00
1934	1	Unknown	297.50
1935	1	Unknown	127.70
1936	1	7,757 cu yd	387.85
1937	1	16,903 cu yd	845.15
1938	1	17,930 cu yd	896.48
1939	4	56,822 cu yd	4,117.03
1940	4	50,011 cu yd	3,777.00
1941	3	96,131.01 cu yd	7,214.57
1942	3	103,377.76 cu yd	7,951.15
1943	3	58,688.54 cu yd	4,509.44
1944	4	98,737.79 cu yd	7,516.09
1945	4	36,601.65 cu yd	2,879.63
1946 ¹	8	177,359.50 cu yd	14,094.87
1947 ¹	6	269,484.6 cu yd	22,838.95
1948 ¹	7	185,736.5 cu yd	16,381.65
1949 ¹	8	217,077.4 cu yd	22,099.33
1950 ¹	10	367,185.2 cu yd	36,975.26
1951 ¹	8	307,516 cu yd	30,984.21
1952 ¹	7	341,654.2 cu yd	34,255.74
1953 ¹	8	979,083 cu yd	98,839.60
1954 ¹	6	1,171,469 cu yd	118,061.45
1955 ¹	5	829,318 cu yd	83,981.98
1956 ¹	9	1,426,210.73 cu yd	144,244.73
1957 ¹	8	1,462,636.6 cu yd	147,446.20
1958 ¹	6	1,370,547.6 cu yd	136,796.78
1959 ¹	7	1,918,085.98 cu yd	196,333.49
1960	8	1,921,168.93 cu yd	198,052.67
1961	9	1,528,116.6 cu yd	155,041.53
1962	6	153,518.17 cu yd	18,833.67
	3	978,458.59 tons	230,605.29
1963	4	92,029.3 cu yd	13,873.20
	4	1,364,882.77 tons	333,678.67
1964	3	73,010.15 cu yd	12,137.45
	3	1,573,683.27 tons	381,477.21
1965	1	98,227.25 cu yd	14,790.93
	3	1,185,962.16 tons	291,725.96
1966	1	56,481.3 cu yd	9,840.60
	4	1,308,330.43 tons	300,599.55

1967	2	40,777	cu yd	6,179.10
	5	1,091,221.84	tons	291,644.58
1968	1	16,812.5	cu yd	2,520.97
	4	813,929.86	tons	207,358.15
1969	1	9,435	cu yd	1,415.85
	4	1,455,174.55	tons	354,441.91
1970	1	78,574.77	cu yd	12,055.90
	4	1,051,422.5	tons	254,019.23
1971	1	18,778	cu yd	2,816.70
	3	1,140,390.95	tons	336,692.42
1972	1	0	cu yd	0
	3	1,208,282.34	tons	267,260.41
1973	2 ⁴	786,601.105	tons	172,753.05
1974 Jan.-Apr.,	2 ⁴	189,653.60	tons	41,723.81
Production Totals:		15,653,253.03	cu yd	reported
		3,529,027	cu yd	unreported from 1946-1959
		19,182,280.03	cu yd	
		14,147,993.965	tons	
Grand Totals:		28,534,703.9875	tons ²	\$5,055,721.89 ³

¹3,529,027 cubic yards were not reported from 1946 through 1959.

²One cubic yard weighs approximately 1,500 pounds or 75% of one ton.

This weight is the contracted standard weight for shell between the State and all modern shell lessees. 19,182,280.03 cubic yards was converted to 14,386,710.0225 tons.

³Includes penalty payments for the 1946-59 unreported production.

The Port Authority received approximately \$1,390,000 in royalties from the Grand total.

⁴Permits

ORIGIN AND STATUS OF CURRENT SHELL DREDGING OPERATIONS

The number of shell dredging leases generally declined after the early 1900's until only 4 remained by the mid-1970's. All 4 of these Florida shell leases expired in February, 1972. The lease application and administrative controls developed in the late 1960's, as a result of increased environmental awareness and governmental reorganization, went into and remain in effect and are reflected in these lease contract renewals (Appendix IV). The Bay Dredging and Construction Company and the Benton and Company leases were amended and extended to December 31, 1972. No action, however, was taken on the lease extension applications by Radcliff Materials Company and the Fort Myers Shell and Dredging Company, and all Florida dredging activities by those companies ceased. The leases and permits of these last 4 shell dredging companies are compared in Table I.

When the lease extensions of Bay Dredging and Benton neared expiration, the Trustees administratively issued permits under the provisions of Chapter 253, Florida Statutes, dated December 13, 1972, which enabled these companies to continue shell dredging without a formal lease until December 12, 1975, in Tampa and Hillsborough Bays in Hillsborough County. The permits were issued with approval of the DNR and Corps of Engineers. Although there were no royalty rate stipulations contained therein, the former lease rate of 22 cents per ton continued to be paid to the DNR. Further, the permits included stipulations that proposed dredge areas be designated in advance so environmental impact studies of new areas could be conducted (Appendix VI). Despite stricter control, the 2 active dredging companies as of June 30, 1974, operate under requirements very similar to those stipulated in the lease contracts issued in 1962 and 1967.

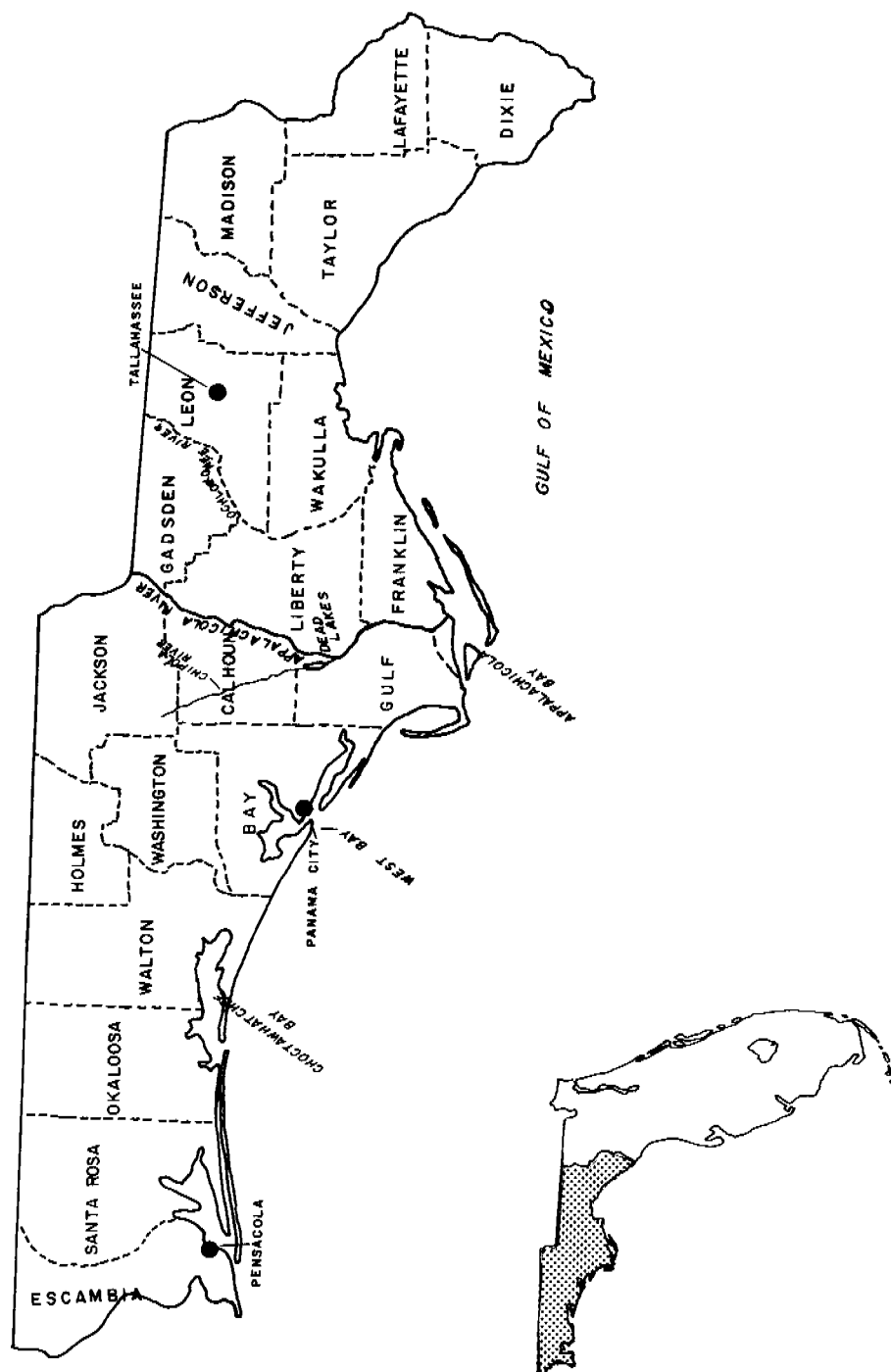


Figure 2. Northwest Florida shell dredge areas.

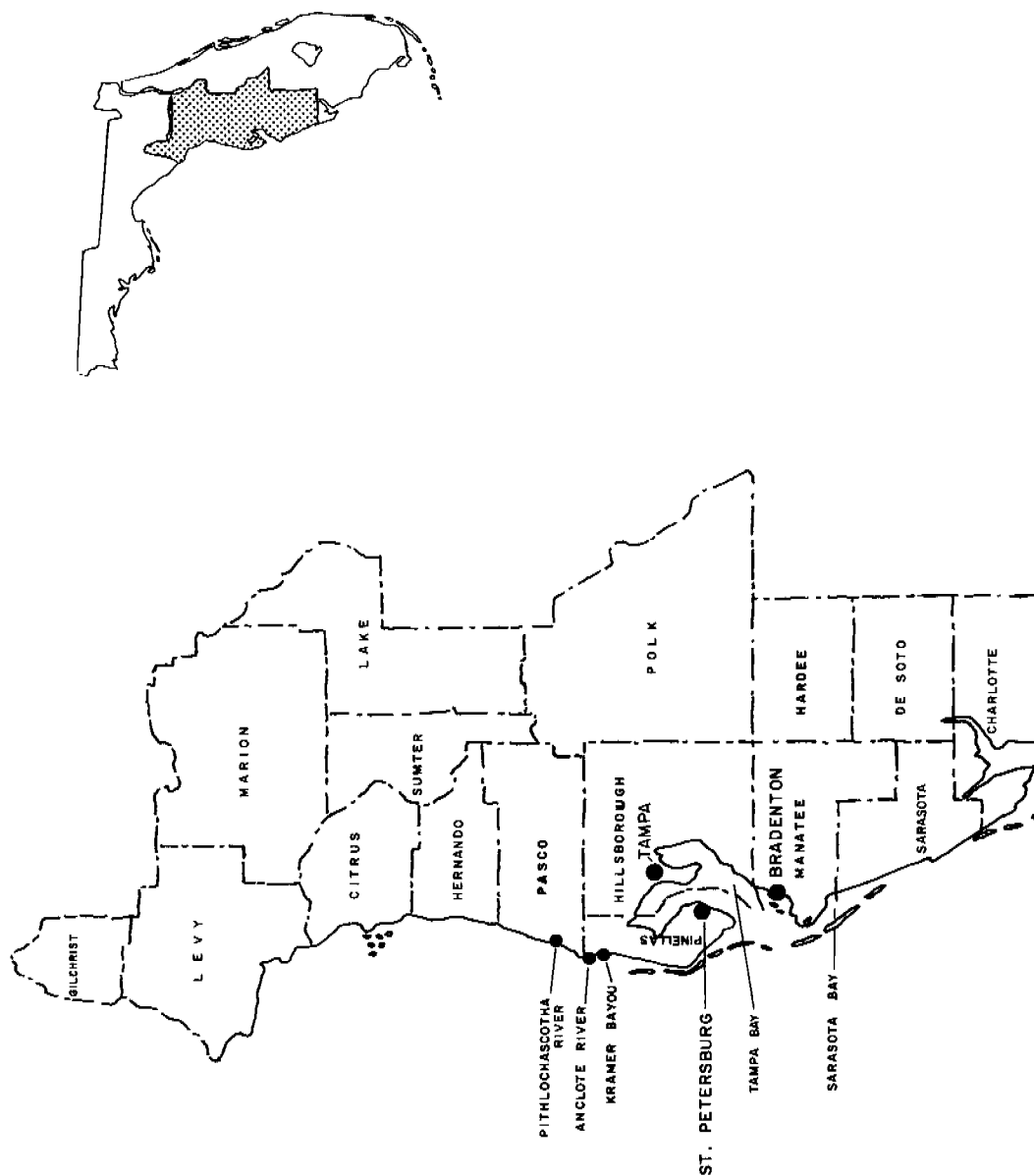


Figure 3. Southwest Florida shell dredge areas.

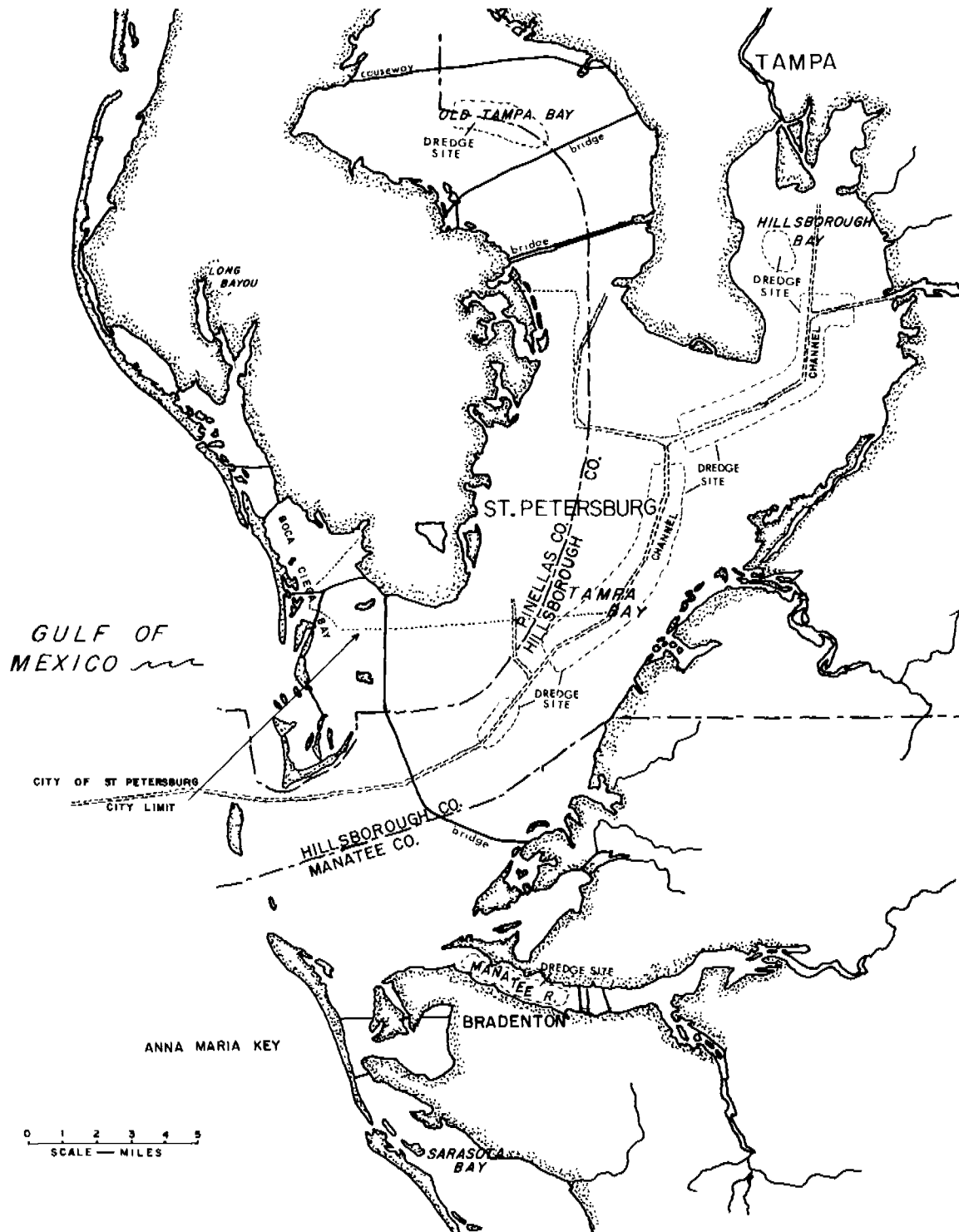


Figure 4. Tampa Bay shell dredge areas.

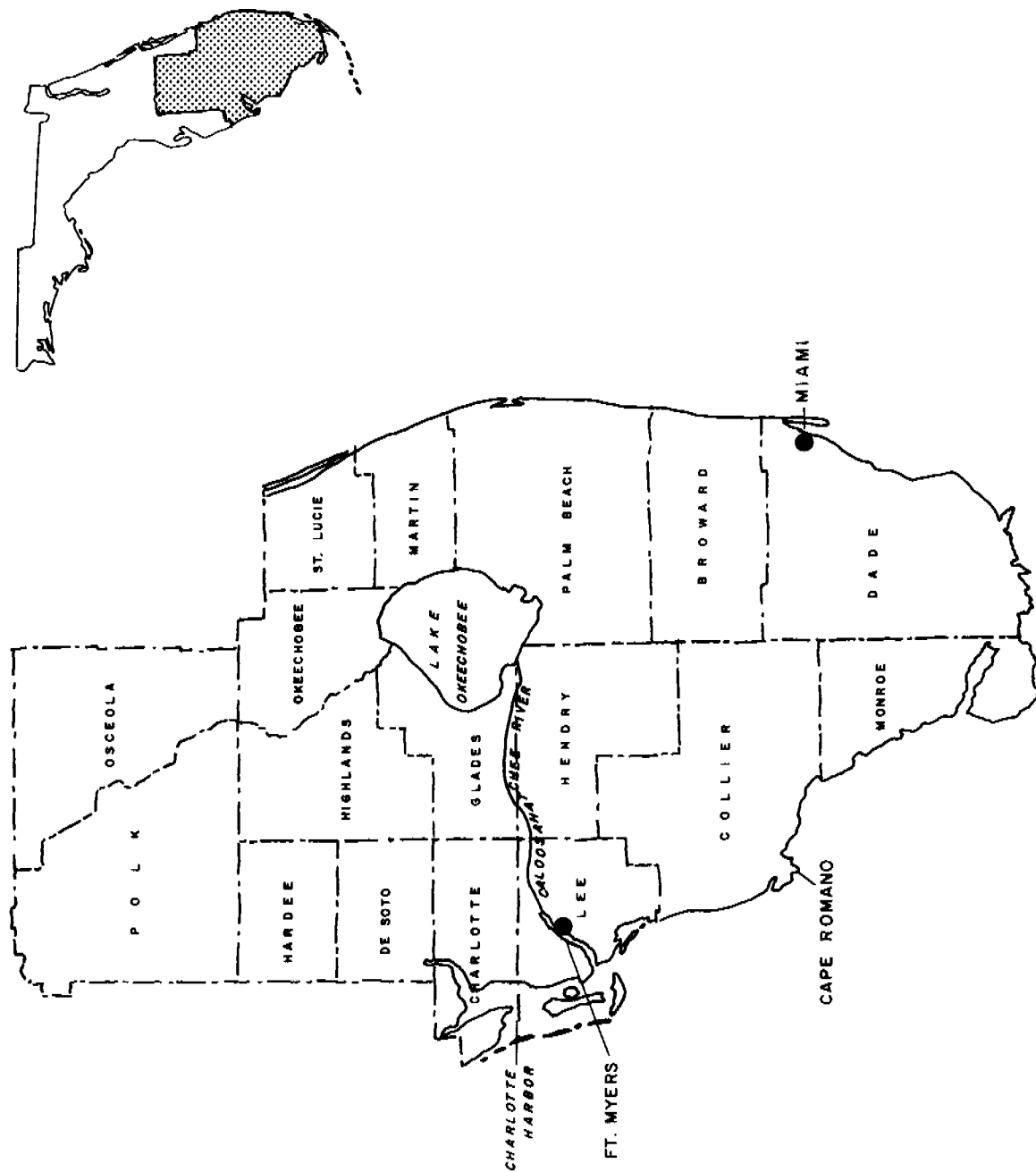


Figure 5. South Florida shell dredge areas.

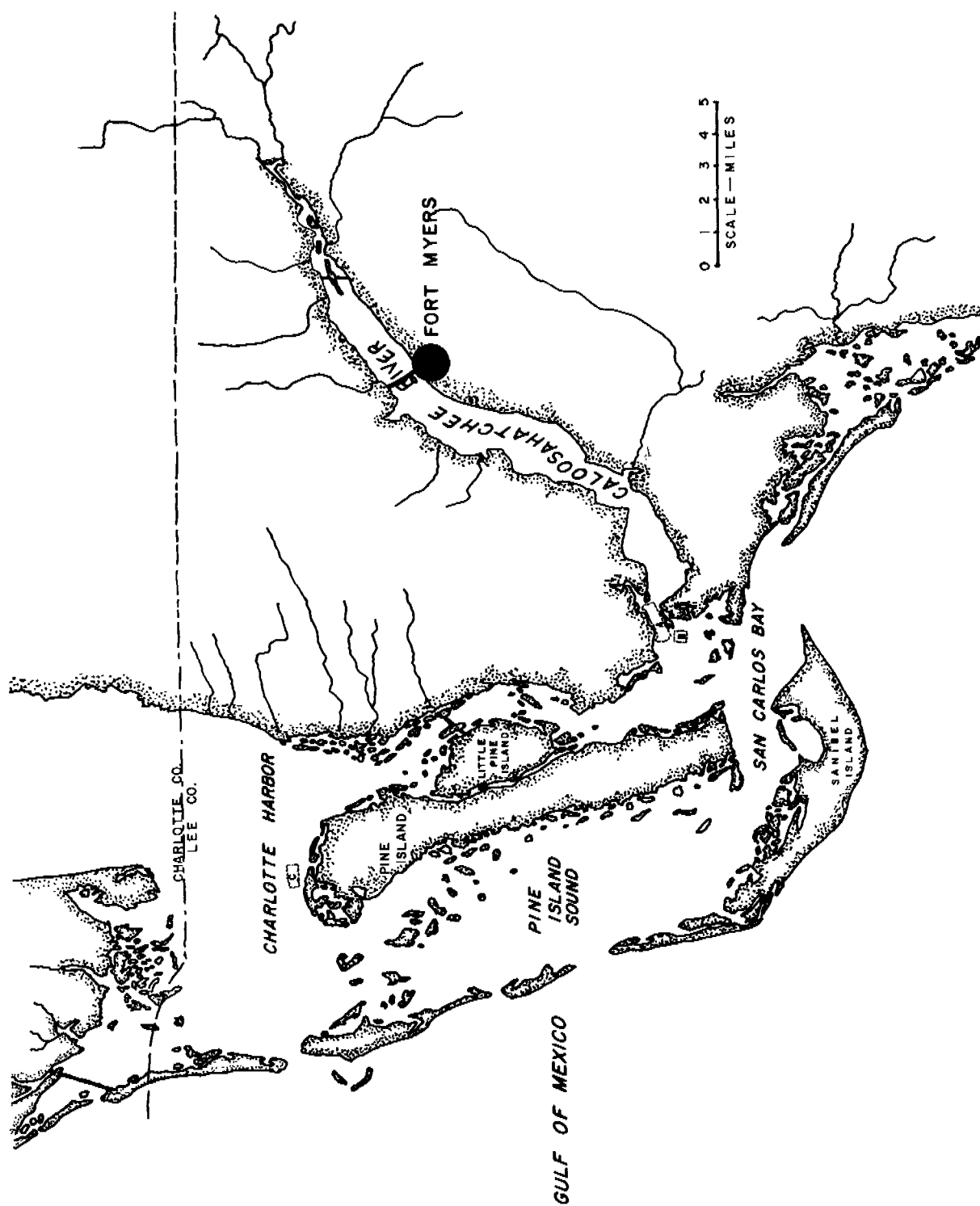


Figure 6. Fort Myers area; A, B, and C are shell dredge sites.

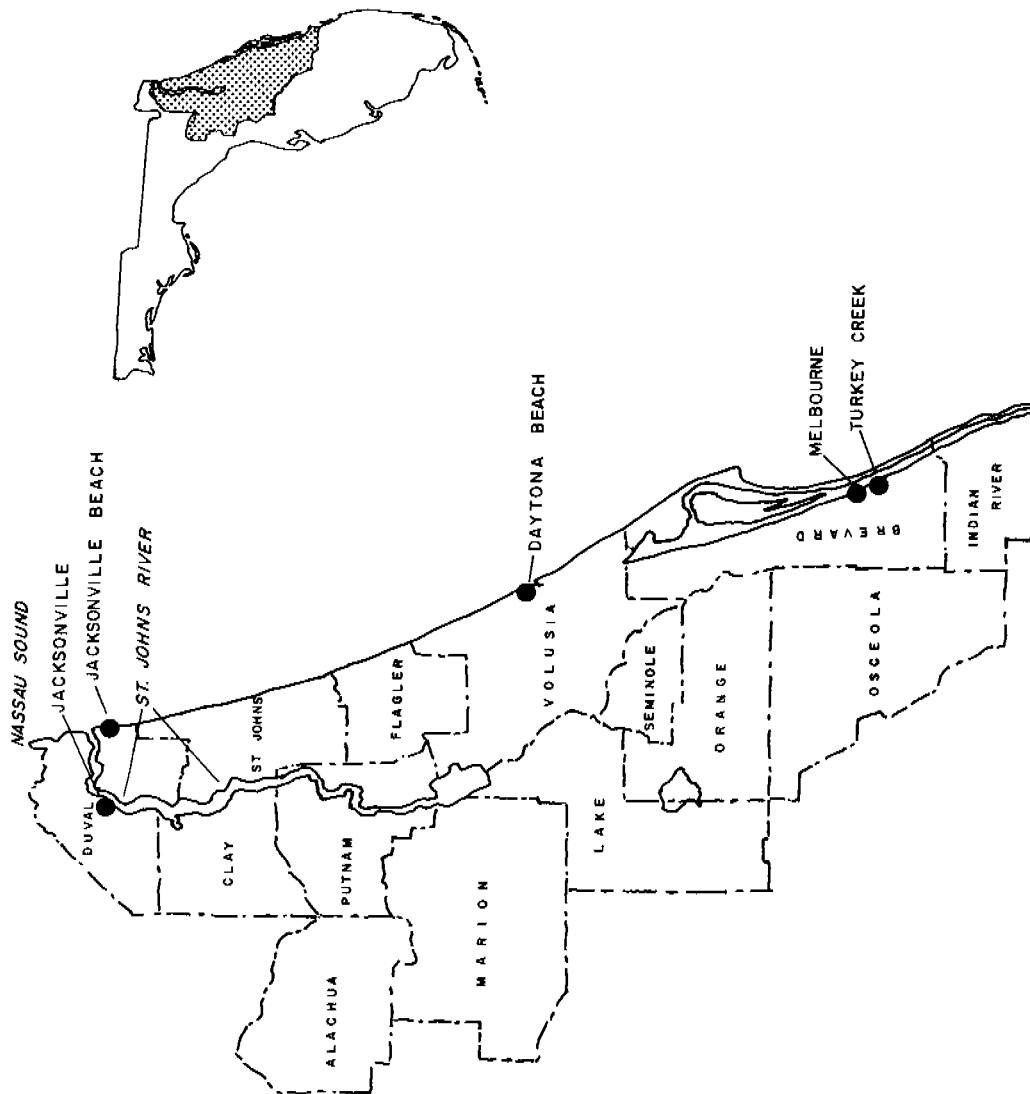


Figure 7. Northeast Florida shell dredge areas.

ACKNOWLEDGMENTS

Special thanks are given to Mr. Wendell Roberts for use of some of his data covering Florida shell dredging from 1946 to 1962. Thanks also to Miss Bobby Shelfer and other employees of the Trustees for their personal assistance and patience in seeking out obsolete files and records, and to Mrs. Judith Green who typed the manuscript. Robert M. Ingle, former Chief of the Florida Bureau of Marine Science and Technology and Edwin A. Joyce, Jr., present Chief, are thanked for their direction and encouragement as are Joe A. Quick, Jr., and Edward J. Little of the DNR Marine Research Laboratory for their editorial criticism.

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APPENDIX I

FLORIDA STATUTES

Chapter 253.45 Sale or lease of phosphate, clay, minerals, etc., in or under state lands.

(1) The board of trustees of the internal improvement trust fund may sell or lease any phosphate, earth or clay, sand, gravel, shell, mineral, _____ in, on, or under, any land the title to which is vested in the state, the department of general services, the department of natural resources, _____ or any other state board, department or agency; provided that the board of trustees may not grant such a sale or lease on the land of any other state board, department or agency without first obtaining approval therefrom. No sale or lease provided for in this section shall be allowed on hard-surfaced beaches, _____. Any sale or lease provided for in this section shall be conducted by competitive bidding as provided for in Chapters 253.52, 253.53 and 253.54, Florida Statutes. The proceeds of such sales or leases are to be credited to the board of trustees, board, department or agency which has title or control of the land involved.

(2) The board of trustees of the internal improvement trust fund or any other state agency authorized to grant leases under this section shall specify in each such lease, in clear and precise terms, the particular minerals for which the lessee is permitted to drill or mine and the manner in which the same may be extracted.

APPENDIX II

FLORIDA STATUTES

Chapter 370.16 Oysters and shellfish; regulation.

(31) Revenue from sale of dead shells and lease bottoms.
Any and all moneys hereafter received or collected by the board of trustees of the internal improvement trust fund under the provisions of Chapter 253.45, Florida Statutes, or any amendments thereof for or on the account of the sale of dead shell or for the right or privilege to take shell or shell deposits from the sovereign lands of the state shall be deposited in the state treasury in the general revenue fund. These moneys shall be appropriated for use in financing biological, marketing, transportation, processing, and promotional research for fisheries, oyster, clams and shrimp, within the jurisdiction of this state; provided that the department of natural resources is authorized and directed to spend up to twenty per cent of the moneys collected from the sale of dead oyster shell dredged from that county's waters for the sole purpose of oyster and clam rehabilitation.

(32) Dredging of dead shells from live ground prohibited.
The dredging of dead shell deposits from living oyster grounds is hereby prohibited in the state. The said board is hereby empowered to prohibit all dredging of dead oyster shell deposits when in its judgment and discretion the same will adversely affect the said oyster industry. The said board, however, may authorize the dredging of dead oyster shell deposits by permit when in its judgment and discretion the same will not adversely affect the oyster industry of the state.

APPENDIX III

DNR RECOMMENDED POLICIES FOR
ADMINISTRATION OF LEASES
FOR THE TAKING OF DEAD OYSTER SHELL

Background—Under the authority of Section 253.45, Florida Statutes, the Trustees — as owners of sovereignty tidal water bottoms — may lease certain areas for the purpose of removing dead oyster shell. Section 370.16(31), Florida Statutes, provides that all funds received from such leases shall be turned over to the DNR for deposit in the State General Revenue Fund.

To eliminate confusion and inefficiency created by the involvement of many agencies, and to simplify procedural matters both for the State and the lessee, the State Cabinet acting as the DNR and the Trustees transferred full responsibility for the administration of these leases to the DNR. The procedures which have been set up by the DNR for guidance of all concerned are summarized below.

Issuance of leases—Leases for taking dead shell will continue to be issued by the Trustees, but applicants for such leases will be instructed to file their application simultaneously with the Trustees and the DNR. The application should include the following information:

- (a) name and address of applicant (if a corporate or business name is used, then the name of the appropriate individual agent should also be included).
- (b) a reasonably accurate description of the area desired to be covered by the lease, with a map showing approximate boundaries.
- (c) a statement of the purpose for which the shell will be taken.
- (d) an estimate of the expected volume of shell to be taken.
- (e) a description of the methods and types of equipment to be used.
- (f) term of lease desired.
- (g) effective date of lease desired.
- (h) financial statement or references as to financial status, if specifically requested.

Upon receipt of the application, the DNR will make whatever investigations are considered necessary to advise the Trustees concerning issuance of the lease. Written notice will be sent to the various governmental environmental protection agencies for their comments. The application is advertised for public bid after receipt of all comments. (The original applicant is usually the high or only bidder).

The lease application is then prepared for submission to the State Cabinet. A standard form of lease instrument will be drawn, modified in each case to meet peculiar requirements, if any. The Attorney General will be called upon to prepare necessary modifications and to approve the lease in its final form. The lease is formally issued upon approval by the State Cabinet.

Maintenance of files and records—All files and records pertaining to dead shell leases, including an executed copy of each lease and sufficient evidence of the required surety bond, will be maintained by the DNR. Fiscal and administrative audits will be conducted from time to time, as directed by the DNR or the Trustees, to insure that all files and records are being maintained in a competent and efficient manner.

Payments procedures—All royalties, fees and other payments due under dead shell leases shall be remitted directly to the DNR, to be received by the DNR no later than the 25th of the month following the month for which payment is being made. Each lessee will be provided with copies of a standard form on which to report the amount of shell taken during the month, the rates at which the shell was sold, and the amount of money owed the State. A completed copy of this report form will be submitted by the lessee with each monthly remittance.

After the 25th of each month and before the 1st of the following month, the DNR will prepare a consolidated summary of the activity under each lease as indicated by the individual report forms. This summary will include:

- (a) lease number
- (b) lessee
- (c) amount of shell taken during the month

- (d) royalty rate
- (e) amount of money remitted
- (f) special notes or comments, if applicable copies of this summary will be provided to all concerned by the 5th of the following month.

As a check on the overall status of each lease, the amount of monthly remittance for each will be entered on a single ledger sheet to be maintained as a part of a master file. This sheet should start at least as far back as January, 1961, or on the effective date for leases issued since that time. A glance at this sheet would reveal whether or not a lease was current in its payments, and would permit a ready analysis of the activity under individual leases as well as comparison among the several leases for any given area.

If payment on any lease is not received by the 1st of the month following the month due, the DNR will immediately notify the lessee by registered mail of his delinquent status. If by the 25th of the month following the month due the account has not been restored to good standing, or acceptable explanation made, then the Executive Director of the DNR may take whatever action he deems necessary to protect the interests of the State in the matter.

Tampa Port Authority—Leases covering areas within Port Authority boundaries will be executed jointly by the Port Authority and the State. Negotiations will be initiated by the applicant directly with the State, which will in turn establish necessary liaison with the Port Authority. Payments of royalties under such leases likewise will be made directly to the DNR, in the manner above described. All royalties and other payments under such leases will be divided equally between the DNR and the Port Authority. After the 25th of each month, the DNR will determine the proper share due the Port Authority under each such lease, and will forward this amount with an explanatory report to reach the Port Authority by the 5th of the following month.

Inspections and audits—From time to time, in order to insure that the provisions of each lease are properly being complied with, the DNR will make investigations into the operations of each lessee, including audits of the lessee's books and records. Personnel conducting such investigations and audits will report their findings immediately to the Executive Director of the DNR, who shall take whatever action he considers necessary or desirable to rectify any discrepancies which may be found.

APPENDIX IV

AN EXAMPLE OF A MODERN SHELL LEASE

TAMPA PORT AUTHORITY
AND

STATE OF FLORIDA
DEPARTMENT OF NATURAL RESOURCES

SHELL LEASE

No. 1234x.

THIS CONTRACT, LEASE AND PERMIT, AND FRANCHISE TO REMOVE SOLID MINERAL, made and entered into this _____ day of _____, A. D. 19____, between the Tampa Port Authority as concerns that part of the lands covered hereunder owned by said Authority and being more particularly described in Chapter 23338, Laws of Florida, Acts of 1945, and Chapter 59-1358, Laws of Florida, Acts of 1959, and Chapter 63-1400, Laws of Florida, Acts of 1963, and Chapter of 70-716, Laws of Florida, Acts of 1970, and the State of Florida Department of Natural Resources hereinafter called the LESSORS, and John Doe Dredging, Inc., hereinafter called LESSEE;

WITNESSETH: That the LESSORS for and in consideration of the sum of TEN (\$10.00) Dollars in hand paid, receipt whereof is hereby acknowledged and twenty-two cents (22¢) per ton, or such greater amount, as hereinafter set forth, do hereby grant, bargain and sell to the LESSEE and to

its successors and assigns, for an extension of the Agreement dated February 2, 1967, as amended by the parties, to December 31, 1972 as heretofore approved by the Corps of Engineers, and for an additional extension period ending December 31, 1975, subject to approval by the Corps of Engineers, also subject to proper certification by the Department of Pollution Control, and also subject to a biological survey by the Department of Natural Resources, the right, leave, license and permit to dredge, mine and take shell for road building or commercial purposes from that part of Tampa Bay within the statutory boundaries of Hillsborough County.

Together with the right, leave, license and permit to enter into and upon said areas with the necessary machinery and equipment to mine, dredge and take from the said territory, shell, and conveying to the LESSEE the title to all shell so taken and paid for.

The right, leave, license and permit hereby granted is upon the following express terms and conditions:

FIRST: That the said Lessee in its operations upon said territory and in taking shell therefrom shall not in any manner interfere with the navigation of the said waters of said territory, or the public's legitimate use of said waters.

SECOND: That the said Lessee shall not dredge or take shell from any locality where the taking of same would injure or damage any private or public structure or property, or marine resource.

THIRD: That at the end of each calendar month during the life and term of this permit, the Lessee will faithfully account to and pay over to the Lessors for all shell taken during the current month, and pay over to the Lessors the sum of twenty-two cents (22¢) per ton, or such greater amount, as hereinafter set forth for shell sold or used. In no case shall the time of accounting and making payment for shell sold in any one month be later than the 25th day of the succeeding month. The Lessee shall submit to Lessors within ten (10) days after the end of each quarter during the extended and additional term, and also within ten (10) days after February 2, 1972 and within ten (10) days after December 31, 1972, the inventory and location of shell produced and owned by Lessors which has not been paid for by Lessee.

FOURTH: That in accounting and paying for shell so sold, the Lessors agree to take and accept shipping weights of measurements where such shell is weighed or measured for shipping by rail or otherwise, and standard weights of measurements where such shell is used or sold without shipping. It is hereby agreed that 1500 pounds shall constitute one cubic yard.

FIFTH: That should said Lessee, its successors or assigns, at any time fail to live up to and carry out any of the terms and conditions of this contract, lease and permit, and franchise to remove solid mineral, that then and in that event the Lessors shall have the right to cancel the same and stop the further taking of shell hereunder.

SIXTH: That the Lessors or their duly authorized agents shall have the right at any and all times to inspect the books and works of the Lessee in any matter pertaining to this contract, lease and permit, and franchise to remove solid mineral.

SEVENTH: That should the Lessee assign its rights hereunder, such assignment shall not be binding on the Lessors, unless agreed to in writing by the Lessors and a copy of such assignment shall be filed with and deposited with the Lessors, and the Assignee gives bond as required of the Lessee herein.

EIGHTH: This lease and permit is not exclusive and this contract, lease and permit, and franchise to remove solid mineral shall not abridge or limit the rights and privileges heretofore granted by the Lessors in any similar contract, lease or permit covering any or all of the above described territory. And without limitations, this lease and permit shall in no way affect any agreement by the Tampa Port Authority relating to harbor improvements and developments and Authority projects.

NINTH: The royalty provided for herein shall always be in an amount of not less than ____ per annum for each 12 month period of the lease irrespective of the amount of shell mined hereunder.

TENTH: All royalty payments shall be made on or before the 25th day of each month during the term of the lease on the basis of twenty-two cents (22¢) per ton of shell or such amount per ton determined from time to time to be the prevailing rate, whatever is the greater, sold by Lessee during the Preceding calendar month.

ELEVENTH: All payments hereinabove referred to shall be made to the State of Florida Department of Natural Resources, Crown Building, Tallahassee, Florida, and all matters relating hereto in which the State is involved shall be presented to this state through the State of Florida Department of Natural Resources which is charged with the sole administration and enforcement of this lease agreement. As applies to the proceeds of shell dredged within the boundaries of

Hillsborough County, the State of Florida Department of Natural Resources shall pay to the Tampa Port Authority an amount equal to fifty per cent (50%) of the payments received under this lease. Such payments shall be made by the State of Florida Department of Natural Resources directly to the Tampa Port Authority on or before the 5th day of the month following the month in which shell is paid for by the Lessee. The State of Florida Department of Natural Resources agrees to submit with each remittance to the Tampa Port Authority accounting of the payment suitable for record-keeping purposes, and to make available to the Tampa Port Authority all its books, records and accounts as related to this lease and payments made thereunder upon request by the Tampa Port Authority.

TWELFTH: That before any actual dredging is begun, the exact site of such operation shall be inspected by the State of Florida Department of Natural Resources or its agent to ascertain the effects such digging might have upon the indigenous plant and animal life. No dredging will be permitted when the activity may be found to be harmful to the brackish and marine resources. The Lessee shall provide Lessors with a map showing area in which dredging operation is to be carried on.

THIRTEENTH: If, at any time after dredging has begun, it shall appear to the State of Florida Department of Natural Resources that the activity is not in the best interests of the State of Florida, the Lessors may order such activity to stop.

FOURTEENTH: It is specifically provided that this lease and permit is for dead shell only and that no dredging or mining shall be done on any natural oyster bar where any live oysters are located.

FIFTEENTH: The supervision and policing of the operations provided by the lease shall be under the direct control and supervision of the State of Florida Department of Natural Resources.

SIXTEENTH: That the Lessee shall not dredge or take dead shell from any locality where the dredging or taking of same will in any way damage any public bathing beach.

WITNESSETH FURTHER, That in the event the Lessee shall violate any of the terms herein specified or shall be thirty (30) days past due on any payments due the Lessors, then at the option of the Lessors, the entire remaining balance due under this lease shall be immediately due and payable and the Lessors may order the Lessee to immediately suspend operation hereunder and pay the Lessors the remaining amounts due under the payments provided for above.

WITNESSETH FURTHER, That at termination of said lease, the entire remaining balance due under this lease shall be immediately due and payable and the Lessors may order the Lessee to immediately suspend operation hereunder and pay the Lessors the remaining amounts due under the payments provided for above.

WITNESSETH FURTHER, That the Lessee, itself, and its successors, and assigns, does hereby accept this contract, lease and permit and franchise to remove solid mineral upon the terms and conditions herein specified and set forth, and does hereby promise, obligate and agree to live up to, observe and abide by all terms and conditions hereof, and to make full accountings and payments promptly as provided for in this instrument.

EXECUTED IN TRIPLICATE, each of the parties hereto retaining and original copy hereof.

IN TESTIMONY WHEREOF, the TAMPA PORT AUTHORITY AND THE STATE OF FLORIDA DEPARTMENT OF NATURAL RESOURCES have hereunto set their hands and affixed their seals, and _____ has caused these presents to be executed by its officers hereunto duly authorized and its Corporate seal to be affixed the day and year first above written.

APPENDIX V

STATEMENT ON DEAD SHELL DREDGING

1972

by

Edwin A. Joyce, Jr.

Chief

Bureau of Marine Science & Technology
Florida Department of Natural Resources

Massive deposits of fossil oyster shell located in many bay systems of Florida and other Gulf and Atlantic coastal states represent an important and valuable resource. The shells are used primarily in road grading and construction but also for a variety of other uses including use as cultch in the establishment of new productive oyster reefs.

Since literally millions of tons of dead shell have been produced from many bay systems of the Gulf of Mexico (production has continued for over 100 years in Mobile Bay) the effects of such dredging have been *well* studied and by men whose reputations are based on their knowledge and understanding of estuarine systems (i.e., R. M. Ingle, J. G. Mackin, Gordon Gunter and Robert Lunz).

Based on these works and more recent studies it appears that dead shell dredging under *proper restrictions* can be one of the least damaging methods of utilizing a non-living resource. Furthermore, this resource (dead shell) is vitally needed for use in the construction on new oyster producing areas [both public (government sponsored) and private (leases)]. It is only through this construction that we have managed to at least partially defray the great loss of productive oyster areas caused by pollution.

The key to the acceptability of dead shell dredging lies in the formulation and enforcement of reasonable restrictions on this activity. There have been sufficient studies to tell us where the main problem areas lie, and Florida regulations have recognized these.

However, in view of the increasing interest in dredging activity, the accompanying fear of potential damage, and the need for the resource being gathered, a restatement and a further definition of these restrictions appears to be in the best interest of all groups (biologists, environmentalists, and dredge companies).

- 1) As in the past, all areas to be dredged must be approved by the Department of Natural Resources in coordination with other appropriate agencies prior to any dredging activity.
- 2) Dredges *must not* operate on any reef that has living oysters on it, nor within approximately 200 yards of any area with living oysters or any attached vegetation. Since the majority of fossil oyster shell is actually buried under one or more feet of silt (overburden) this is not usually a problem. However, in those rare cases where a small patch of living oysters prevents the use of a large bed of dead shell, I would suggest that the State consider a trade. A biologist would be required to check the area in question (prior to any dredging), determine its approximate size, and estimate its production potential. Then, if this potential was found to be minimal, the *biologist* would select a public area of good oyster growing conditions and the dredging company would build a *new* oyster reef (under the biologist's direction) to replace the one to be lost. There are extensive precedents for this action both in Florida and Texas. I would also suggest that the replacement area be *larger* than the one lost, say a five to one ratio. Thus, the dredging company itself would make the determination of whether this area in question would be worth the trouble.
- 3) Since siltation caused by dredging can be a problem (although most studies have found that the major silt burden drops out within one hundred yards of the dredge), dredges should work parallel with the current. Thus, the majority of the sediments will fall out either in the area to be worked or the area just completed. This will go a long way in limiting the total area affected by the dredging activity.
- 4) Dredges should avoid working in areas of heavy public use.
- 5) Dredge companies should make efforts to avoid leaving deep holes scattered around the working area. The area should be leveled as working continues or prior to leaving the site.

Further suggestions:

- 1) To completely assure interested parties that all restrictions are under compliance, I would suggest that one or more biologists be employed by the dredging company to accompany each operating dredge boat. Professional observations and exact working areas, yards of shell produced and all other pertinent data for each dredge boat's activity would be submitted by the biologist *each* week for review by the Department of Natural Resources' Shellfish Coordinator who would also make occasional (irregular) spot checks of the operations. This would also provide an opportunity to more closely evaluate dredging operations to determine if restrictions are indeed sufficient to prevent damage.
- 2) I would also suggest that an independent research organization be funded by the dredging companies to bring together all pertinent information (new and past), the end result to be a completely factual, unbiased, and detailed publication for the interested citizenry that will more completely present the pros and cons of dredging. Then, legislators and government officials will be able to judge whether or not dead shell dredging effects are sufficiently damaging to warrant cessation of operations, or whether the effects are minimal and temporary (as research thus far indicates) with the advantages outweighing the damages.

This research could also consider one new area which has recently been questioned, that is, damage to the populations of organisms that live in the overburden (that almost liquid, silt and mud lying over the dead shell deposits). Some research indicates that these populations reestablish themselves relatively quickly (within a couple of months) but work is preliminary and more needs to be done.

In summary, dead shell dredging produces a highly useful and valuable resource and research, thus far, indicates minimal damage to the area ecology provided the operation is done under the above listed restrictions. Further research would be helpful in determining the extent and importance of benthic communities of the overburden and the amount of time required for its reestablishment after dredging. The ultimate decision must be made by government officials based on factual evidence, as to the relative value of the resource and the associated changes wrought by its reclamation. This decision will either preserve or eliminate the shell dredging industry in Florida and it must not be made lightly.

APPENDIX VI

AN EXAMPLE OF A SHELL DREDGE PERMIT

P E R M I T

***** IMPORTANT NOTICE *****

THIS PERMIT IS NOT VALID UNLESS SEAL
OF BOARD OF TRUSTEES OF THE INTERNAL
IMPROVEMENT TRUST FUND IS AFFIXED.

HILLSBOROUGH COUNTY

ISSUED TO :

John Doe Dredging, Inc.

File No. 1234x

Expiration Date: December 13, 1975
or upon completion of work,
whichever occurs first.

To dredge dead shell from submerged lands in Tampa and Hillsborough Bays.

BY THE STATE OF FLORIDA
BOARD OF TRUSTEES OF THE
INTERNAL IMPROVEMENT
TRUST FUND

BY _____

EXECUTIVE DIRECTOR

Permit No. 1234x

Type: DREDGE

Date: December 13, 1972

STATE OF FLORIDA
BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND

WHEREAS, application by:

John Doe Dredging, Inc.

for a permit under the provisions of Chapter 253, Florida Statutes, to perform certain works in the navigable waters of the State of Florida, was approved by said State of Florida Board of Trustees of the Internal Improvement Trust Fund at the meeting of DECEMBER 12, 1972.

NOW, THEREFORE, this Permit authorizes the above named applicant, hereinafter called Permittee, to perform such works subject to the conditions contained herein: To dredge dead shell from submerged lands in Tampa and Hillsborough Bays, Hillsborough County.

Approximately 300,000 cubic yards of material per year.

This permit is issued subject to the stipulations attached hereto and made a part thereof.

1. The proposed work shall be done in the area designated on the attached map. This Permit is not valid unless the seal of the Board of Trustees of the Internal Improvement Trust Fund appears on the map;

2. All dredging shall be done in such a manner as to prevent or minimize dispersion of silt and debris and destruction of marine resources in the public waters;

3. If the dredging is being done in other than a meandered body of fresh water, only sand shall be removed. No oyster bars or shell deposits shall be disturbed or undermined by dredging or other operations pursuant to this Permit;

4. The use of draglines or dredges with cutter heads is prohibited in fresh water lakes without special approval in writing from the State of Florida Board of Trustees or the Internal Improvement Trust Fund. The impermeable seal or strata shall not be disturbed.

5. Material removed in construction shall be placed upon the adequately diked spoil disposal area or areas designated on said map;

6. The material removed shall be used only for the improvement of upland property owned by the Permittee and shall not be sold. Under no circumstances shall the Permittee remove more material than authorized by this Permit without specific approval of the State of Florida Board of Trustees of the Internal Improvement Trust Fund;

7. No fill shall be made on the water side of the original natural ordinary or mean high water mark. This Permit conveys no title to land or water, and does not constitute authority for the reclamation of water bottom unless herein provided;

8. Extreme care shall be exercised to prevent any adverse or undesirable effects from this work on the property of others. This Permit authorizes no invasion of private property or rights in property;

9. This Permit is granted subject to the rights of the United States in navigable water, and shall be subject, further, to the rights of the public in boating, bathing, fishing, and other rights for which purposes the waters and submerged land thereunder are held by the State. This Permit does not relieve the Permittee from requirement of permit from the US Army Corps of Engineers nor from necessity of compliance with applicable local laws, ordinances, and zoning or other regulations;

10. Permittee, in accepting this Permit, covenants and agrees to comply with and abide by the provisions and conditions herein and assumes all responsibility and liability and agrees to save the State of Florida Board of Trustees of the Internal Improvement Trust Fund harmless from all claims of damage arising out of operations conducted pursuant to this Permit;

11. The Permittee is required to obtain a valid certificate from the State of Florida Department of Pollution Control, issued pursuant to Section 21(b)(1), Public Law 91-224, and Chapter 403, Florida Statutes, before engaging in activities authorized by this Permit;

12. At the Trustees' option, applicant may be required to furnish a cross-section profile map with certificate executed by a Florida Registered Professional Engineer or Land Surveyor, stating quantity of fill material excavated pursuant to this Permit, such certification to be furnished within 90 days after completion of project or expiration of permit, whichever is earlier;

13. A copy of this Permit shall be posted in a conspicuous place on the equipment being used in the dredging operation or shall be readily available at the project site for inspection by all duly constituted law enforcement officers having jurisdiction. This Permit shall become effective upon acceptance by the Permittee and receipt of the executed copy by the State of Florida Board of Trustees of the Internal Improvement Trust Fund, Elliot Building, Tallahassee, Florida 32304;

14. All dredging and spoiling shall be done in such a way that turbidities in the area do not exceed 50 Jackson Units above base;

15. If the work authorized is not complete on or before the 13th day of December, 1975, this authorization, if not previously revoked or specifically extended, shall cease and be null and void;

16. THE PERMITTEE, BY ACCEPTANCE OF THIS PERMIT, AGREES TO ABIDE BY THE STIPULATIONS AND CONDITIONS CONTAINED HEREIN AND TO PERFORM THE WORK IN STRICT ACCORDANCE WITH THE PLANS AND SPECIFICATIONS ATTACHED HERETO AND MADE A PART HEREOF ANY DEVIATION THEREFROM SHALL BE GROUNDS FOR REVOCATION OF THIS PERMIT.

STATE OF FLORIDA BOARD OF TRUSTEES
OF THE INTERNAL IMPROVEMENT TRUST FUND

By _____

Executive Director

Accepted this 18th day of December, A.D., 1972

John Doe Dredging, Inc.

PERMITTEE

By _____

Name and Title

ADDENDUM TO SHELL DREDGE PERMIT

1. Installation of an electronic positioning system similar to that utilized by Radcliff Materials in Mobile Bay so that a permanent record of dredge sites can be maintained, this system to be installed within six months of the date of permit.
2. Proposed dredging areas should be designated at least one month in advance so that an inspection could be conducted before operations commence. The inspection will consist of but not be limited to biological, sedimentological, and hydrological investigations funded by the applicants. The report of such investigations will be made available to review by the environmental agencies. Trustees' staff will approve or deny use of each site on the basis of environmental agency recommendations.
3. No dredging will occur in Class II waters.
4. Dredging equipment shall be modified as necessary to bring the operation within applicable water quality standards utilizing advances in the state of the art. A progress report will be presented to the Trustees in six months with compliance expected within one year.
5. The volume of shell to be dredged will not exceed one million cubic yards per year per applicant.
6. Dredge cuts shall be made parallel to the axis of current flow.
7. Permits shall be reviewed each year. Said review shall consider all new data relating to shell dredging gathered throughout the preceeding year.
8. Violation of any of the foregoing conditions shall be grounds for revocation of permit.