



PUERTO RICO



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Bruce Babbitt
Secretary



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COVER PHOTO:
The Puerto Rico Capitol Building in San Juan symbolizes the cooperative working relationship between the U.S. Bureau of Mines and the mineral agencies of the Commonwealth. (Photo is courtesy of "El Nuevo Dia.")

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THE MINERAL INDUSTRY OF PUERTO RICO, NORTHERN MARIANS, ISLAND POAAWAAIONS, AND TRUST TERRITORY

This chapter has been prepared under a Memorandum of Understanding between the U.S. Bureau of Mines, U.S. Department of the Interior, and the Department of Natural Resources, Commonwealth of Puerto Rico, for collecting information on all nonfuel minerals.

By Steve W. Sikich¹ and Ramon M. Alonso²

THE COMMONWEALTH OF PUERTO RICO

Statistics released by the U.S. Bureau of Mines, Department of the Interior, indicate that the value of nonfuel mineral commodities produced in Puerto Rico was \$166 million. In 1990, production valued at \$126.3 million was reported; however, the values of clays and crushed stone were not included. In 1991, the Commonwealth recorded the second highest mineral value in its history, just 0.6% less than the record high of \$167.0 million achieved in 1988.

Puerto Rico ranked ahead of 12 States in the value of its mineral production. The leading commodity was cement, which accounted for more than two-thirds of the total. Crushed stone, valued at \$49.8 million, ranked second and accounted for more than 30%. Clays and lime, the two other minerals for which production was reported, were responsible for less than 3% of the value.

Trends and Developments

The increase in Puerto Rico's mineral production in 1991 was indicative that the recession that had impacted mainland

United States beginning in 1989 did not have as great an impact on the Commonwealth. Part of the reason that Puerto Rico was spared a serious recession resulted from the \$1.5 billion that was pumped into the island's economy for reconstruction after Hurricane Hugo devastated eastern Puerto Rico in 1989.³

A bill to authorize a Puerto Rican plebiscite on its political status died in a U.S. Senate committee in February. Regardless, the Commonwealth held a referendum in December that defeated by a 53% to 45% margin an antistatehood bill strongly supported by Governor

TABLE 1
NONFUEL MINERAL PRODUCTION¹ IN THE COMMONWEALTH OF PUERTO RICO AND ISLANDS
ADMINISTERED BY THE UNITED STATES

Mineral		1989		1990		1991	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
PUERTO RICO							
Cement (portland)	thousand short tons	1,374	\$112,318	1,486	\$122,027	*1,382	*\$110,560
Clays	metric tons	136,873	311	W	W	145,483	355
Lime	thousand short tons	26	3,800	29	3,483	30	4,440
Sand and gravel (industrial)	do.	30	600	55	825	55	825
Stone (crushed)	do.	8,389	46,648	NA	NA	8,828	49,839
Total		XX	163,677	XX	² 126,335	XX	166,019
ADMINISTERED ISLANDS							
American Samoa: Stone (crushed)	thousand short tons	48	\$476	—	—	69	\$756
Guam: Stone (crushed)	do.	1,063	11,133	—	—	2,201	18,038
Virgin Islands: Stone (crushed)	do.	312	3,159	—	—	W	W
Total		XX	14,768	XX	—	XX	18,794

¹Estimated. W Withheld to avoid disclosing company proprietary data; not included in "Total." XX Not applicable.

²Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

³Total does not include value of item withheld.

Rafael Hernandez Colon.⁴ Supporters of the bill favored remaining a Commonwealth with increased autonomy. Statehood advocates hoped the results of the referendum would convince Congress to authorize a plebiscite in 1992.

Bayamon Steel Producers completed two construction projects: a \$30 million steel galvanizing line at its Bayamon plant and a \$5 million expansion at its second manufacturing facility in Bayamon.

Employment

Preliminary data reported⁵ by the Mine Safety and Health Administration (MSHA) showed an average of 1,708 people directly employed by Puerto Rico's mining industry in 1991. This represents a 16.4% decrease from the 2,044 reported for 1990. Of the total number, 1,081 were employed in surface mines and 627 were employed in mills and preparation facilities. One fatality, at a crushed stone quarry, occurred in Puerto Rico's mining industry in 1991.

Regulatory Issues

The Commonwealth Environmental Quality Board (EQB) formally denied the Puerto Rico Highway Authority permission to initiate reconstruction of the El Yunque Highway (Route 191) through the Caribbean National Forest without first filing an environmental impact statement. EQB ruled that even though the authority had complied with Federal regulations, it was not exempt from provisions of the Commonwealth Environmental Protection Law of 1970. The central part of the highway has been impassable since 1989, when it was extensively damaged by Hurricane Hugo.

In September, the U.S. Environmental Protection Agency (EPA) promulgated new rules regarding the location, design, operation, and postclosure care of nonhazardous solid waste landfills. The regulations gave landfill operators 2 years to bring facilities into conformance with the new rules. The Puerto Rico Solid Waste Management Authority developed a master plan to close 18 of the island's existing 62 landfills and to upgrade 42 of

those remaining to meet the new regulations.

Safety-Kleen Envirosystems began a \$14 million expansion to more than double the current solvent recycling and organic fuel production capacity at its Manati facility. Construction, which began after midyear, was expected to be completed by the end of 1992. In December, Commercial Incineration Corp. submitted construction permit applications to the Puerto Rico Regulations and Permits Administration for a \$3 million expansion of its Carolina hazardous waste incineration facilities. Improvements would include the installation of a biochemical waste incinerator and a plastic recycling facility that would produce plastic wood. In 1990, the last year for which data were published, Safety-Kleen recycled more than 7.7 million gallons of solvents from over 1,000 companies in Puerto Rico. More than 3 million gallons was returned to businesses on the island for reuse. The remaining 4.7 million plus gallons was used to produce organic fuel, which was purchased by San Juan Cement Co. under exclusive contract and used as an energy source for its cement kilns.

Exploration Activities

The U.S. Geological Survey, along with the Puerto Rico Department of Natural Resources (DNR) and the University of Puerto Rico at Mayaguez, neared completion of a reassessment of the mineral resources of Puerto Rico. A public meeting to detail results of the new assessment was tentatively scheduled for mid-1992.

The only private company known to be actively exploring for metallic minerals was Cominco American Resources Inc., which continued a low-level exploration program. Several other companies were reported to have an interest in exploring for metals on the island, but none applied for exploration or exploitation permits.

Legislation and Government Programs

The Caribbean Basin Financing Authority (Carifa) was created in 1990 to

finance economic development projects in countries eligible to participate in the Federal Caribbean Initiative (CBI) program. Carifa was the result of a U.S. Congressional mandate issued in 1990. The mandate required the Commonwealth government to channel a minimum of \$100 million per year in loans to finance development projects in CBI countries for Puerto Rico to maintain its tax benefits granted by section 936 of the U.S. Internal Revenue Code. Carifa employs section 936 funds to provide financing for development projects in the Caribbean and Central America through the issue of tax-exempt industrial revenue bonds in Puerto Rico.⁶ Alcan Aluminum Ltd. of Canada became the first company to take advantage of Carifa when it announced a \$200 million modernization program at its two alumina plants in Jamaica. Carifa bonds will finance \$60 million of the program. The remaining \$140 million will be provided by Alcan.

Fuels

Arochem Corp. closed its 80,000-barrel-per-day refinery at Penuelas late in 1991 after Federal Bureau of Investigations and Internal Revenue Service officials began investigating allegations that top company executives illegally channeled large amounts of money from the firm.⁷ Arochem's shutdown put on hold plans by the company to build, in conjunction with Texaco Inc. and General Electric Co., a multimillion dollar, 240-megawatt cogeneration plant capable of producing both electricity and steam. The electricity was to have been sold to the Puerto Rico Power Authority, and the steam would have been used in Arochem's refining operations.

Review by Nonfuel Mineral Commodities

Industrial Minerals.—Industrial minerals accounted for all of Puerto Rico's mineral production. The Commonwealth ranked ahead of 16 States in the value of industrial minerals produced in 1991.

Cement.—Portland cement, once again, was the most valuable mineral commodity produced in 1991, accounting for 66.9% of the total mineral value. Production was an estimated 1.4 million short tons, 7% less than was produced in 1990. The record-high production in 1990 was bolstered by reconstruction of structures damaged by Hurricane Hugo in late 1989.

Portland cement was produced by two companies in Puerto Rico; neither manufactured masonry cement. Puerto Rican Cement Co., the island's largest supplier of construction materials, operated a dry-process plant with a rated capacity of 1 million short tons per year at Ponce. San Juan Cement, the third largest construction materials supplier, also operated a dry-process plant with a capacity of 850,000 short tons per year.

Plycern Manufacturing Corp., a new venture involving local and Swiss investors, announced plans to construct a \$12 million plant to manufacture cement and fiberboards for use in building construction. The boards are to be made from portland cement, calcium carbonate, and mineralized cellulose fiber using a proprietary manufacturing process.

Clays.—Clay production decreased slightly in volume to 145,483 metric tons and significantly in value to \$355 million from 1990 to 1991. Production in 1991 was 6.3% more than the 136,873 metric tons mined in 1989, the last year for which clay data were published. The value in 1991 was 14.1% greater than the value in 1989. All of the clay production in Puerto Rico was common clay used in the manufacture of portland cement.

Lime.—Puerto Rico produced 30,000 short tons of lime valued at more than \$4.4 million and ranked ahead of 5 of the 32 States that produced lime in 1991. Production decreased 3.4% from that of 1990, but the value of lime increased 27.5%. Puerto Rican Cement Co., the island's only lime producer, manufactured hydrated lime and a minor amount, less than 0.1%, of quicklime. Principal markets were in water purification and construction applications.

Sand and Gravel.—Construction.—Due to very poor response to its canvass forms, the Bureau no longer compiles production data for construction sand and gravel mined in Puerto Rico.

MSHA inspected 42 construction sand and gravel operations that were working full-time in Puerto Rico in 1991, 3 more than in 1990. Seven additional operations were listed as permanently closed, and eight more were worked on an intermittent basis.

Industrial.—Industrial sand and gravel production remained at the same level as

that of 1990, 55,000 short tons valued at \$825,000. Owens-Illinois of Puerto Rico (O-I) was the Commonwealth's only industrial sand producer. O-I manufactured a variety of glass containers using locally mined silica sand and recycled bottles, jars, and domestic glass.

Stone.—Stone production is surveyed by the U.S. Bureau of Mines for odd-numbered years only; data for even-numbered years are based on annual company estimates. This chapter contains actual data for 1989 and 1991 and estimates for 1990.

TABLE 2
PUERTO RICO: CRUSHED STONE¹ SOLD OR USED BY PRODUCERS IN
1991, BY USE

(Thousand short tons and thousand dollars)

Use	Quantity	Value	Unit value
Coarse aggregate (+1 inch): Riprap and jetty stone ²	70	407	\$5.81
Coarse aggregate, graded:			
Concrete aggregate, coarse	1,256	7,422	5.91
Bituminous aggregate, coarse	27	133	4.93
Bituminous surface treatment aggregate	W	W	4.17
Fine aggregate (-3/8 inch):			
Stone sand, concrete	1,416	8,443	5.96
Concrete aggregate, coarse	372	1,756	4.72
Screening, undesignated	W	W	13.25
Other fine aggregate	W	W	4.79
Coarse and fine aggregate:			
Graded road base or subbase	65	181	2.78
Unpaved road surfacing	W	W	4.10
Terrazzo and exposed aggregate	29	270	9.31
Crusher run or fill or waste	35	137	3.91
Other construction materials ³	218	1,556	7.14
Agricultural: Poultry grit and mineral food ⁴	18	175	9.72
Chemical and metallurgical: Cement manufacture	1,391	5,561	4.00
Special: Other fillers or extenders	W	W	4.38
Other miscellaneous uses ⁵	157	741	4.72
Unspecified: ⁶			
Actual	249	1,368	5.49
Estimated	3,524	21,687	6.15
Total ⁷	8,828	49,839	5.65

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials" and "Other miscellaneous uses."

¹Includes granite, limestone, marble, miscellaneous stone, sandstone, sandstone/quartzite and traprock.

²Includes macadam, and filter stone.

³Includes withheld amounts for coarse aggregate, graded, fine aggregate (-3/8 inch), and coarse and fine aggregates.

⁴Includes other agricultural uses.

⁵Includes withheld amounts for special and other specified uses not listed.

⁶Includes production reported without a breakdown by use and estimates for nonrespondents.

⁷Data may not add to totals shown because of independent rounding.

TABLE 3
PUERTO RICO: CRUSHED STONE SOLD OR USED, BY KIND

Kind	1989				1991			
	Number of quarries	Quantity (thousand short tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand short tons)	Value (thousands)	Unit value
Limestone	37	5,084	\$27,187	\$5.35	30	7,235	\$40,191	\$5.56
Marble	4	362	2,787	7.70	4	565	3,426	6.06
Granite	1	W	W	6.73	1	W	W	6.72
Sandstone	1	1	5	5.00	4	287	1,572	5.48
Sandstone and quartzite	—	—	—	—	1	W	W	4.56
Traprock	2	W	W	5.26	—	—	—	—
Miscellaneous stone	3	1,835	9,988	5.44	2	W	W	9.22
Total	XX	8,389	46,648	5.56	XX	8,828	49,839	5.65

W Withheld to avoid disclosing company proprietary data, included in "Total." XX Not applicable.

'Data do not add to total shown because of independent rounding.

Crushed.—Crushed stone was Puerto Rico's second most valuable mineral commodity, accounting for 30.2% of the total value of minerals produced in 1991. total of 8.8 million short tons valued at \$49.8 million was quarried. This was a 5.2% increase, 439,000 tons more than was produced in 1989. The value was \$3.2 million greater in 1991, a 6.8% increase. Contributing to the increase was a \$400 million construction program at the Luis Muñoz Marín International airport in San Juan. Projects requiring crushed stone included construction of a ramp for the new international terminal, construction of a new parking garage, and new roads in front of the airport. The modernization is not expected to be completed until 1995, although the international terminal ramp was nearly completed at yearend.

Crushed stone production was reported by 40 companies from 43 quarries. The five largest producers, in descending order of production, were Productora de Agregados Inc, Arecibo; Puerto Rican Cement Co., Ponce; Empresas Ortiz Brunet, San Juan; Empresas Terrasa, Mayaguez and San Juan; and Cantera Carraizo Inc., San Juan.

Major end uses of crushed stone are summarized in table 2. Types of rock used as crushed stone included granite, limestone, marble, sandstone, and traprock. Data on the quantity and value of each type are included in table 3.

Kivo Group, a Brazilian industrial and trading group with interests in mining, announced plans to construct a \$10 million plant on the south coast of Puerto Rico to process crushed stone for export to construction markets in Canada, Europe, and the United States. Granite used in the operation would be imported from Brazil.

Dimension.—One company, Marmoles Vassco Inc., reported dimension stone production to the Bureau in 1991. Production data were withheld and not included in table 1 to protect proprietary company data. Production consisted of sawed marble blocks from a quarry in Aquadilla County. MSHA reported two other dimension stone quarries operating full-time in 1991: a marble quarry operated by Empresas Tito Castro Inc. and a quarry with the rock type not specified operated by Canteras Del Sur Inc. Both quarries are in Ponce County.

Other Industrial Minerals.—Two additional industrial minerals were recovered in Puerto Rico. Salt, evaporated from seawater, was produced by two companies in southwestern Mayaguez. Salt was also imported through the Port of San Juan. Elemental sulfur was recovered as a byproduct of oil refining by the Sun Oil Co. Inc. at Yabucoa.

Peat moss imports through the Port of San Juan decreased from 497 short tons

valued at \$109,000 in 1990 to 291 tons valued at \$119,000 in 1990. The record-high peat imports in 1990 was attributed to the use of horticultural material to landscape houses rebuilt as a result of Hurricane Hugo.

Metals.—Metals have not been mined in Puerto Rico since the Juncos iron mine closed in 1953, and prospects for resuming metal mining in the foreseeable future are unlikely. However, metal occurrences are common on the island, and the possibility of future development of an economic metal deposit should not be completely discounted. Work by the U.S. Geological Survey has identified more than 150 metallic mineral occurrences. Types of metal deposits identified included porphyry copper; copper skarn; iron skarn; porphyry copper-gold; polymetallic veins; volcanogenic manganese; epithermal quartz-alunite gold; lateritic nickel; placer gold-platinum-group alloys; shoreline placer titanium; copper manto; and metallic occurrences of copper, iron, gold, and molybdenum.

Among Puerto Rico's major exports are metal products manufactured from material imported from the United States and foreign countries and from recycled scrap. Aluminum was extruded to manufacture contours in the form of tubes, channels, and angles by Alruss Extrusion and Finishing Corp. and Aluminum Extrusion Corp. (Alumex).

Alumex produced 50% of its own ingots from a recycling plant in Canovanas.

Although no steel is manufactured in Puerto Rico, more than 20 companies sell or install steel imported mainly from the United States. Bayamon Steel Producers constructed a \$30 million steel galvanizing line that will allow the company to produce galvanized steel from imported cold-rolled and hot-rolled steel using a hot-dip zinc galvanizing process. The hot-dip galvanizing line, the first of its kind in Puerto Rico and the Caribbean, will have the capacity to produce 120,000 tons of galvanized steel per year. Products manufactured from the galvanized steel will be sold in Puerto Rico and shipped to markets on the U.S. mainland. The \$5 million expansion project doubled the size of Bayamon's 80,000-square-foot-facility in the Lucchetti Industrial Park.

THE COMMONWEALTH OF THE NORTHERN MARIANAS

Sixteen islands with a total area of 164 square miles comprise the Commonwealth of the Northern Marianas. A 17th island, Guam, is the southernmost island of the Mariana island chain but is not part of the Commonwealth. Although the Northern Marianas theoretically has equal status with the Nation's only other Commonwealth, Puerto Rico, the U.S. Department of the Interior plays a much larger role in its administration. The only mineral production on the islands was crushed stone for the local construction industry.

CARIBBEAN ISLAND POSSESSIONS

The Caribbean Island Possessions consist of the U.S. Virgin Islands, which includes 3 major islands, more than 50 smaller islands, and 7 islands lying off the Central American coast. The major islands are St. Croix, St. John, and St. Thomas. Mineral production was reported from St. Croix and St. Thomas in 1991.

Review by Nonfuel Mineral Commodities

The only mineral commodity mined in the Virgin Islands in 1991 was crushed stone. One other industrial mineral, elemental sulfur, was recovered as a byproduct of oil refining; a metal, alumina, was refined from imported bauxite.

Industrial Minerals.—Stone.—Crushed stone production data were withheld because only two companies, Devcon International Corp. on St. Croix and St. Thomas and St. Croix Stone and Sand Co. on St. Croix, reported production to the Bureau in 1991. MSHA records indicate that a third company, No. 1 Contracting Corp., operated a traprock quarry at Sara Hill in St. Thomas. MSHA also inspected two stone crushing operations on the islands. V. I. Cement and Building Products Inc. operated the Springfield crusher on St. Thomas, and Inter Island Inc. of Puerto Rico operated a mobile crusher at an unspecified location.

Devcon, based in Deerfield Beach, FL, operated the Brookman Quarry about 7 miles west of Charlotte Amalie on St. Thomas. Production capacity from the quarry is listed at 150,000 short tons per year. Devcon also imports cement from Columbia and fine sand from Barbuda, a small island about 200 miles east of St. Thomas. The sand supplements manufactured sand produced from the crushed stone and is used in the manufacture of concrete blocks.

Caribbean Material Supply Co. Inc., a wholly owned Devcon subsidiary, operated the Springfield Quarry near Groveplace on St. Croix. Plant capacity was 150 tons per hour, about the same as that of the St. Thomas plant. St. Croix Stone and Sand Co. operated the Robes Hill Quarry near Frederiksted. Plant capacity was about 125 tons per hour. No. 1 Contracting Corp. operated the Sara Hill Quarry on St. Thomas.

Other Minerals.—The Virgin Islands Aluminum Corp., a subsidiary of the Swiss-based aluminum trading company

Clarendon Ltd., operated a 700,000-short-ton-per-year alumina refinery on St. Croix. The refinery, built by Martin Marietta, had been idle since 1985. Bauxite, the basic raw material used in manufacturing the alumina, was imported from the recently opened bauxite deposits on the Berbice River in Guyana.

PACIFIC ISLAND POSSESSIONS

The Pacific Island Possessions consist of 12 islands or island chains that were acquired by the United States between 1839 and 1967. The major islands are American Samoa, Guam, and Johnston. The only mineral production on the islands that was reported to the Bureau was crushed stone for local construction. American Samoa reported the production of 69,000 short tons valued at \$756,000. This represented a 44% increase in quantity and a 59% increase in value from data reported in 1989. The unit price of the stone increased from \$9.92 per ton in 1989 to \$10.56 per ton in 1991. Crushed stone production on Guam was 2.2 million short tons valued at slightly over \$18 million. This represented a 107% increase in quantity, but only a 62% increase in value from data reported in 1989. The average cost of crushed stone decreased 22% from \$10.47 per ton in 1989 to \$8.20 per ton in 1991.

Regulatory Issues

A temporary permit, allowing the U.S. Army to destroy chemical weapons, was extended for an additional 180 days. The permit, which originally expired in December 1990, covered the destruction of weapons containing nerve gas and mustard gas. The U.S. Army was also waiting for a decision from EPA on its request to make permanent modifications to the Johnston Atoll Chemical Agent Disposal System facility that would incorporate design and operational improvements.

Legislation and Government Programs

Australia, New Zealand, and the United States entered into an agreement to continue marine geoscientific research and studies of the mineral resource potential of the South Pacific region. Studies conducted by the South Pacific Offshores Areas organization will include evaluation of the mineral and hydrocarbon potential of areas in the South Pacific.

TRUST TERRITORY OF THE PACIFIC ISLANDS

The Trust Territory of the Pacific Islands was created in 1947 when the United Nations created 11 trusteeships for territories captured from Japan and other Axis powers. The only territory remaining in the Trust, the Republic of Palau, applied for "free association" status with the United States in 1983, but a compact has not yet been ratified. Under terms of free association, the United States would provide economic aid and be responsible for Palau's defense in return for being allowed to maintain military bases on the island. The major obstacle in ratifying the compact has been a nuclear free clause in Palau's constitution, which the United States deems incompatible with its defense and security interests.

Mineral production was not reported from Palau. Micronesian Mineral Resources, a subsidiary of an exploration company based in Denver, CO, completed the evaluation of a gold prospect discovered in 1989 near the southern tip of Babelthuap, the largest island in the Palau group. The prospect proved to be noncommercial.

¹State Mineral Officer, U.S. Bureau of Mines, Tuscaloosa, AL. He has 33 years of industry and government experience and has covered the mineral activities in Puerto Rico since 1989. Assistance in the preparation of the chapter was given by Maylene E. Hubbard, editorial assistant.

²Director, Puerto Rico Geological Survey.

³Caribbean Business (San Juan, Puerto Rico). Editorial: The Worst Is Behind Us. Mar. 14, 1991, p. 38.

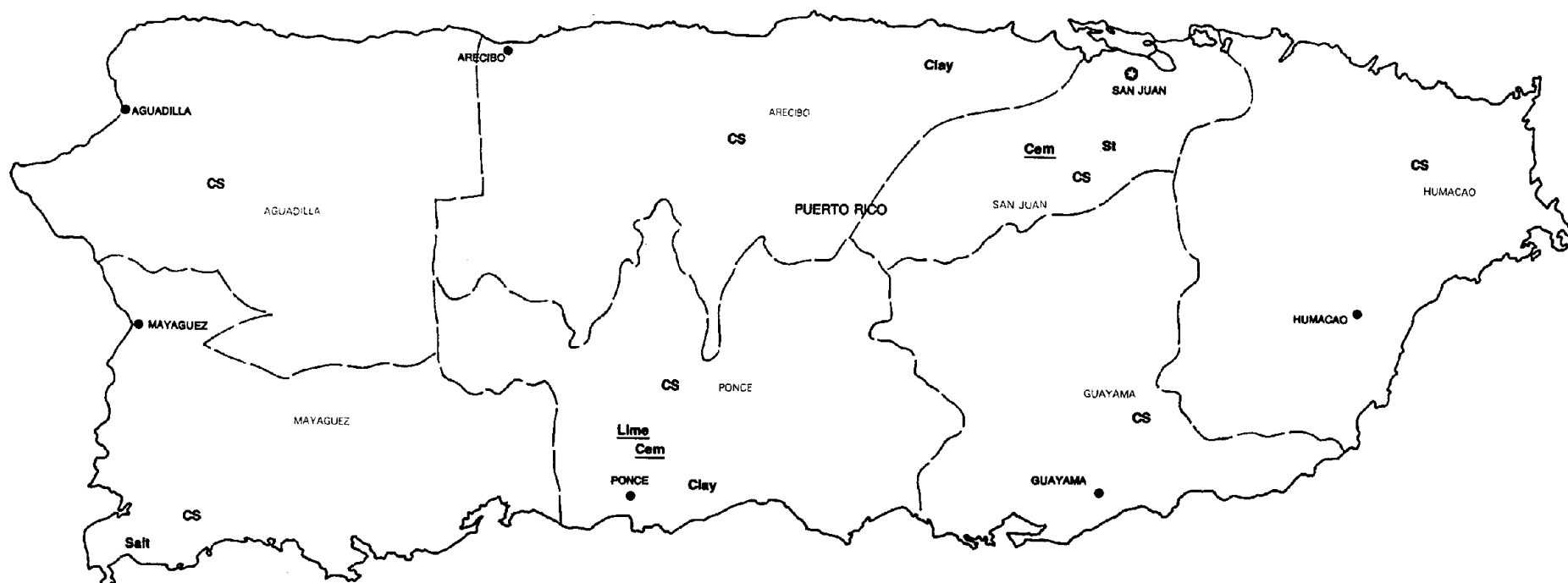
⁴Birmingham (AL) Post-Herald. Victory Sweet for Puerto Ricans Who Favor Closer Bonds With U.S. Dec. 10, 1991, p. B6.

⁵U.S. Department of Labor. Mine Injuries and Work Time, Quarterly. Jan.-Dec. 1991, p. 14.

⁶Caribbean Business (San Juan, Puerto Rico). Alcan Aluminum To Upgrade Jamaica Plants. V. 19, No. 8, Feb. 28, 1991, p. 33.

⁷———. Hopes Grow That Arochem Will Reopen Here. V. 20, No. 10, Mar. 12, 1992, p. 11.

PUERTO RICO



LEGEND

- State boundary
- - - District boundary
- ★ Capital
- City

MINERAL SYMBOLS

- Cem Cement plant
- Clay Clay
- CS Crushed Stone
- Lime Lime plant
- Salt Salt
- St Stone

Principal Mineral-Producing Localities

TABLE 4
PRINCIPAL PRODUCERS

Commodity and company	Address	Type of activity	County
PUERTO RICO			
Cement:			
Puerto Rican Cement Co. ¹	Box 1349 Ponce, PR 00733	Plant	Ponce.
San Juan Cement Co. ²	GPO 2888 San Juan, PR 00936	do.	San Juan.
Sand (industrial):			
Owens-Illinois Inc.	Box 387 Vega Alta, PR 00762	Pit and plant	Arecibo.
Stone (crushed):			
Productora De Agregados Inc.	Box 1052 Sabana Seca, PR 00749	Quarry	Do.
Empresas Ortiz Brunet	Box 1839 Guaynabo, PR 00657	do.	San Juan.
Terressa Aggregates Inc.	24 Building 35 #17-Sta Rosa Bayamon, PR 00620	do.	Mayaguez and San Juan.
Cantera Carrizo Inc.	Box 2588 San Juan, PR 00936	do.	San Juan.
Stone (dimension):			
Marmoles Vassco Inc.	Box 8238 Ponce, PR 00732	do.	Aquadilla.
Empresas Tito Castro Inc. ³	Box 589 Ponce, PR 00731	do.	Ponce.
Sulfur:			
Puerto Rico Sun Oil Co.	Box 476 Yabucoa, PR 00767	Plant	Humacao.
VIRGIN ISLANDS			
Alumina:			
Virgin Islands Alumina Inc.	Box 1525 Kingshill St. Croix, VI 00851	Plant	St. Croix.
Stone (crushed):			
Devcon International Corp.	Box 7368 St. Thomas, VI 00801	Quarry	St. Thomas.
St. Croix Stone & Sand Inc.	Box 732 Frederiksted St. Croix, VI 00840	do.	St. Croix.
GUAM			
Sulfur:			
Amerada Hess Corp.	1 Hess Plaza Woodbridge, NJ 07095	Plant	St. Croix.
Stone (crushed):			
Guam Government Public Works Dept.	Agana, GU 96910	Quarry	Guam.
Hawaiian Rock Products	Box H Agana, GU 96910	do.	Do.
Perez Brothers Inc.	Box F Agana, GU 96910	do.	Do.

¹Also lime, clay, and crushed stone.

²Also clay and crushed stone.

³Also crushed stone and construction sand and gravel.

MINERAL-RELATED GOVERNMENT AGENCIES

FEDERAL

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U.S. Department of Labor
Mine Safety and Health Administration
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