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APEX MUNICIPAL FUND INC
Form N-CSRS
March 01, 2005

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM N-CSRS

CERTIFIED SHAREHOLDER REPORT OF REGISTERED MANAGEMENT
INVESTMENT COMPANIES

Investment Company Act file number 811-05227

Name of Fund: Apex Municipal Fund, Inc.

Fund Address: P.O. Box 9011
Princeton, NJ 08543-9011

Name and address of agent for service: Robert C. Doll, Jr., President, Apex
Municipal Fund, Inc., 800 Scudders Mill Road, Plainsboro, NJ 08536.
Mailing address: P.O. Box 9011, Princeton, NJ 08543-9011

Registrant's telephone number, including area code: (609) 282-2800

Date of fiscal year end: 06/30/05

Date of reporting period: 07/01/04 - 12/31/04

Item 1 - Report to Stockholders

[LOGO] Merrill Lynch Investment Managers

www.mlim.ml.com

Apex Municipal
Fund, Inc.

Semi-Annual Report
December 31, 2004

[LOGO] Merrill Lynch Investment Managers

Apex Municipal Fund, Inc.

Quality Profile

The quality ratings of securities in the Fund as of December 31, 2004 were as follows:

S&P Rating/Moody's Rating	Percent of Total Investments
A/A	3.9%
BBB/Baa	17.9
BB/Ba	20.6
B/B	10.5

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Over the past year, the equity market generally found support from a healthy economic environment, above-average corporate earnings, increased capital spending and still-low interest rates. Stalling the momentum somewhat throughout the year was a contentious election, negligible inflation amid a rising federal funds interest rate, record-high oil prices and the seemingly ever-present worries over terrorism and the war in Iraq.

Still, the Standard & Poor's 500 Index posted a 12-month return of +10.88% and a six-month return of +7.19% as of December 31, 2004. The fourth quarter of the year proved to be the most telling, as the S&P 500 Index was up only 1.51% year-to-date as of September 30, 2004. As the price of oil relaxed and election uncertainties subsided, the market headed more convincingly upward in the last quarter of the year.

Given the relatively positive environment for equities, the favorable performance of the bond market came as somewhat of a surprise. The Lehman Brothers Aggregate Bond Index posted a 12-month return of +4.34% and a six-month return of +4.18% as of December 31, 2004. The tax-exempt market performed just as well, with a 12-month return of +4.48% and a six-month return of +5.19%, as measured by the Lehman Brothers Municipal Bond Index. Those comfortable with a higher degree of risk benefited this past year, as the Credit Suisse First Boston High Yield Index posted a 12-month return of +11.95% and a six-month return of +9.26%. Interestingly, as the Federal Reserve Board began raising its target short-term interest rate, long-term bond yields were little changed. In fact, the yield on the 10-year Treasury was 4.24% at year-end compared to 4.27% at December 31, 2003. The yield on the two-year Treasury climbed to 3.08% at year-end 2004 from 1.84% a year earlier.

As always, our investment professionals are closely monitoring the markets, the economy and the overall environment in an effort to make well-informed decisions for the portfolios they manage. For the individual investor, the key to investment success -- particularly during uncertain times -- is to maintain a long-term perspective and adhere to the disciplines of asset allocation, diversification and rebalancing. We encourage you to work with your financial advisor to ensure these time-tested techniques are incorporated into your investment plan.

We thank you for trusting Merrill Lynch Investment Managers with your investment assets, and we look forward to serving you in the new year and beyond.

Sincerely,

/s/ Robert C. Doll, Jr.

Robert C. Doll, Jr.
President and Chief Investment Officer
Merrill Lynch Investment Managers

APEX MUNICIPAL FUND, INC.

DECEMBER 31, 2004

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[LOGO] Merrill Lynch Investment Managers

A Discussion With Your Fund's Portfolio Manager

The Fund provided a positive total return for the period, as we continued to pursue opportunities to diversify the portfolio and enhance yield.

Describe the recent market environment relative to municipal bonds.

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Over the past six months, long-term bond yields declined significantly as their prices, which move in the opposite direction, increased. The rise in bond prices came as somewhat of a surprise, as the economy generally continued to improve. Gross domestic product growth was recently reported at 4% for the third quarter of 2004, up from 3.4% in the second quarter. However, recent improvements in domestic business activity have been offset by inflationary measures remaining in the 1.5% - 2% range.

For its part, the Federal Reserve Board (the Fed) raised its short-term interest rate target by 25 basis points (.25%) to 1.25% in June, the first change in more than a year. In its accompanying statement, the Fed called for a "measured" approach to interest rate increases, removing much of the earlier concern that it might embark on a dramatic series of interest rate hikes. The prospect for a more moderate tightening sequence helped support higher bond prices for the remainder of the period. Four subsequent Fed interest rate hikes brought the federal funds rate to 2.25% by period-end, but had limited market impact as monthly U.S. employment gains remained modest. In addition, strong currency-related demand for U.S. Treasury issues from many foreign governments helped bolster fixed income bond prices. By the end of December 2004, long-term U.S. Treasury bond yields stood at 4.85%, a decline of 46 basis points over the past six months. The 10-year U.S. Treasury note yield fell 36 basis points to 4.24%.

The municipal bond market benefited from a generally supportive technical environment throughout the six-month period. Consequently, while tax-exempt bond yields followed the same pattern as their taxable counterparts, yield volatility was more subdued than that seen in the U.S. Treasury market. Long-term revenue bond yields, as measured by the Bond Buyer Revenue Bond Index, fell 30 basis points over the six months. As reported by Municipal Market Data, AAA-rated issues maturing in 30 years saw their yields decline 41 basis points to 4.61%, while yields on 10-year, AAA-rated issues declined 43 basis points to 3.52%.

During the period, more than \$170 billion in new long-term tax-exempt bonds was underwritten, a decline of nearly 7.5% versus the same six months a year ago. The declining supply trend allowed tax-exempt bond prices to register significant gains over the period, performing similarly to their taxable counterparts. New-issue municipal volume should be easily manageable in early 2005, continuing to support the tax-exempt market's favorable technical position.

Relative to Treasury issues, long-term tax-exempt bond yield ratios have remained in the 85% - 95% range, at or above their recent historic average of 85% - 88%. These attractive yield ratios should continue to attract both traditional and non-traditional investors to the tax-exempt market.

How did the Fund perform during the period in light of the existing market conditions?

For the six-month period ended December 31, 2004, the Common Stock of Apex Municipal Fund, Inc. had net annualized yields of 5.99% and 6.46%, based on a period-end per share net asset value of \$9.53 and a per share market price of \$8.84, respectively, and \$.288 per share income dividends. Over the same period, the total investment return on the Fund's Common Stock was +7.85%, based on a change in per share net asset value from \$9.13 to \$9.53, and assuming reinvestment of all distributions.

The Fund's total return for the period, based on net asset value, slightly lagged the +8.13% average return of the Lipper High Yield Municipal Debt Funds category. Funds in this Lipper category invest at least 50% of their assets in lower-rated municipal debt issues. Several funds in the Lipper group also employ leverage, a strategy that is not within the Fund's investment parameters. Given the low borrowing rates we have seen for some time now, leverage has been a

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competitive advantage for these funds. Absent the levered funds, the Fund's return exceeded the average of its unlevered peers.

Benefiting performance during the period was the Fund's overweight exposure to corporate-related tax-exempt debt as well as tax-backed debt and bonds in the transportation and health care sectors. The strong performance in these areas has been driven largely by the continued narrowing of credit spreads, a trend observed in both the municipal market and the taxable bond market. The narrowing of spreads has

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APEX MUNICIPAL FUND, INC.

DECEMBER 31, 2004

been supported by a generally improving economy, a moderate pace of inflation and the Fed's measured approach to interest rate increases, which generally served to sustain investors' appetites for risk.

In terms of specific securities, we saw strong performance from a capital appreciation bond (or zero coupon bond) representing toll-road financing for the Pocahontas Parkway in Virginia. In conjunction with the toll road's opening in 2002 and the subsequent increase in traffic, spreads on the bond narrowed significantly, making it a meaningful contributor to Fund performance in the past six months.

For a description of the Fund's total investment return based on a change in the per share market value of the Fund's Common Stock (as measured by the trading price of the Fund's shares on the New York Stock Exchange), and assuming reinvestment of dividends, please refer to the Financial Highlights section of this report. As a closed-end fund, the Fund's shares may trade in the secondary market at a premium or discount to the Fund's net asset value. As a result, total investment returns based on changes in the market value of the Fund's Common Stock can vary significantly from total investment returns based on changes in the Fund's net asset value.

What changes were made to the portfolio during the period?

We continued to focus on capturing relative value within the high yield municipal arena as a means of enhancing Fund returns over time. To that end, we continued to pursue opportunities to diversify the portfolio and enhance yield. This involved reductions in the corporate sector and increased exposure to non-rated credits.

In light of the significant rally seen in corporate-related debt, we began to realize profits through selective sales of some of our holdings, particularly in wood and forest products, capital goods and technology sectors. We made these reductions with the realization that the corporate sector traditionally tends to be the most volatile in the municipal market. Thus, when the credit cycle does turn and spreads begin to widen, we would expect corporate-related bonds to suffer the most. Our goal, therefore, has been to realize profits where we can and reduce exposure to a sector that has experienced the greatest volatility over time.

In our previous report to shareholders, we mentioned that the Fund had above-market concentrations in credits rated BBB and BB. At that time, we stated our desire to boost portfolio income through a reallocation of assets into lesser-rated, or non-rated issues. We have since pursued that strategy with some success, and as a result, the Fund's income reserves have increased. At the same time, we were able to reduce our overweighting and approach a market weighting in credits rated BBB and BB.

Finally, we maintained the Fund's exposure to debt issued by the State of

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California, and performance has benefited as investors' appetite for risk has continued to drive the spreads on these bonds tighter.

How would you characterize the Fund's position at the close of the period?

We maintain a largely positive view on credit spreads, although we believe we have seen the majority of the contraction at this point. Having said that, we will continue to further reduce our overweight exposure to the corporate-related debt sectors, using the proceeds from the sales to increase the Fund's exposure to health care and tax-backed debt. These represent higher-quality, lower-volatility securities, and also complement our efforts to improve the overall diversification of the portfolio.

Theodore R. Jaeckel Jr., CFA
Vice President and Portfolio Manager

January 12, 2005

APEX MUNICIPAL FUND, INC. DECEMBER 31, 2004 5

[LOGO] Merrill Lynch Investment Managers

Schedule of Investments (in Thousands)

State	Face Amount	Municipal Bonds
Alabama--0.6%	\$ 1,000	Brewton, Alabama, IDB, PCR, Refunding (Container Corporation of America--Jefferson Smurfit Corp. Project), 8% due 4/01/2009
Alaska--1.1%	2,000	Alaska Industrial Development and Export Authority Revenue Bonds (Williams Lynxs Alaska Cargoport), AMT, 8% due 5/01/2023
Arizona--4.1%	1,000	Maricopa County, Arizona, IDA, Education Revenue Bonds (Arizona Charter Schools Project 1), Series A, 6.625% due 7/01/2020
	80	Maricopa County, Arizona, IDA, M/F Housing Revenue Bonds (Sun King Apartments Project): Series A, 5.875% due 11/01/2008
	20	Series A, 6% due 11/01/2010
	970	Series A, 6.75% due 5/01/2031
	1,500	Sub-Series C, 9.50% due 11/01/2031
	4,000	Phoenix, Arizona, IDA, Airport Facility Revenue Refunding Bonds (America West Airlines Inc. Project), AMT, 6.30% due 4/01/2023
	1,000	Pima County, Arizona, IDA, Education Revenue Bonds (Arizona Charter Schools Project), Series E, 7.25% due 7/01/2031
	500	Yavapai County, Arizona, IDA, Hospital Facility Revenue Bonds (Yavapai Regional Medical Center), Series A, 6% due 8/01/2033
California--3.8%	1,800	California State, GO, 5% due 2/01/2033
	1,300	California State, Various Purpose, GO: 5.25% due 11/01/2025
	820	5.25% due 4/01/2034
	1,000	Fontana, California, Special Tax, Refunding (Community

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	1,860	Facilities District Number 22--Sierra), 6% due 9/01/2034 Golden State Tobacco Securitization Corporation of California, Tobacco Settlement Revenue Bonds, Series B, 5.50% due 6/01/2043
=====		
Colorado--5.5%	2,920	Denver, Colorado, Urban Renewal Authority, Tax Increment Revenue Bonds (Pavilions), AMT, 7.75% due 9/01/2016
	2,800	Elk Valley, Colorado, Public Improvement Revenue Bonds (Public Improvement Fee), Series A, 7.30% due 9/01/2022
	1,235	North Range, Colorado, Metropolitan District Number 1, GO, 7.25% due 12/15/2031
	2,000	Plaza Metropolitan District No. 1, Colorado, Tax Allocation Revenue Bonds (Public Improvement Fees), 8% due 12/01/2025
	830	Southlands, Colorado, Medical District, GO (Metropolitan District # 1), 7.125% due 12/01/2034
=====		
Connecticut--1.0%	490	Connecticut State Development Authority, Airport Facility Revenue Bonds (LearJet Inc. Project), AMT, 7.95% due 4/01/2026
	1,220	New Haven, Connecticut, Facility Revenue Bonds (Hill Health Corporation Project), 9.25% due 5/01/2017

Portfolio Abbreviations

To simplify the listings of Apex Municipal Fund, Inc.'s portfolio holdings in the Schedule of Investments, we have abbreviated the names of many of the securities according to the list at right.

AMT	Alternative Minimum Tax (subject to)
EDA	Economic Development Authority
GO	General Obligation Bonds
IDA	Industrial Development Authority
IDB	Industrial Development Board
IDR	Industrial Development Revenue Bonds
M/F	Multi-Family
PCR	Pollution Control Revenue Bonds
VRDN	Variable Rate Demand Notes

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APEX MUNICIPAL FUND, INC.

DECEMBER 31, 2004

Schedule of Investments (continued)

(in Thousands)

State	Face Amount	Municipal Bonds
=====		
Florida--7.8%	\$ 855	Arbor Greene Community Development District, Florida, Special Assessment Revenue Bonds, 7.60% due 5/01/2018
	800	Capital Projects Finance Authority, Florida, Continuing Care Retirement Revenue Bonds (Glenridge on Palmer Ranch), Series A, 8% due 6/01/2032
	2,500	Hillsborough County, Florida, IDA, Exempt Facilities Revenue Bonds (National Gypsum), AMT, Series A, 7.125% due 4/01/2030
	895	Lakewood Ranch, Florida, Community Development District Number 5, Special Assessment Revenue Refunding Bonds, Series A, 6.70% due 5/01/2031
		Midtown Miami, Florida, Community Development District,

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		Special Assessment Revenue Bonds, Series A:
	1,500	6% due 5/01/2024
	1,350	6.25% due 5/01/2037
	1,605	Orlando, Florida, Urban Community Development District, Capital Improvement Special Assessment Bonds, Series A, 6.95% due 5/01/2033
	1,700	Santa Rosa Bay Bridge Authority, Florida, Revenue Bonds, 6.25% due 7/01/2028
	2,760	Tampa Palms, Florida, Open Space and Transportation Community Development District Revenue Bonds, Capital Improvement (Richmond Place Project), 7.50% due 5/01/2018
=====		
Georgia--3.5%	2,000	Atlanta, Georgia, Tax Allocation Revenue Bonds (Atlantic Station Project), 7.90% due 12/01/2024
		Brunswick & Glynn County, Georgia, Development Authority, First Mortgage Revenue Bonds (Coastal Community Retirement Corporation Project), Series A:
	830	7.125% due 1/01/2025
	1,185	7.25% due 1/01/2035
	1,500	Milledgeville--Baldwin County, Georgia, Development Authority Revenue Bonds (Georgia College and State University Foundation), 5.25% due 9/01/2019
	830	Savannah, Georgia, EDA, Revenue Bonds (Marshes of Skidaway), First Mortgage, Series A, 7.40% due 1/01/2034
=====		
Idaho--0.8%	1,470	Idaho Health Facilities Authority, Revenue Refunding Bonds (Valley Vista Care Corporation), Series A, 7.75% due 11/15/2016
=====		
Illinois--4.8%	1,845	Caseyville, Illinois, Senior Tax Increment Revenue Bonds (Forest Lakes Project), 7% due 12/30/2022
	3,000	Chicago, Illinois, O'Hare International Airport, Special Facility Revenue Refunding Bonds (American Airlines Inc. Project), 8.20% due 12/01/2024
	400	Chicago, Illinois, Special Assessment Bonds (Lake Shore East), 6.75% due 12/01/2032
	3,190	Illinois Development Finance Authority Revenue Bonds (Primary Health Care Centers Facilities Acquisition Program), 7.75% due 12/01/2016
	755	Lincolnshire, Illinois, Special Service Area No. 1, Special Tax Bonds (Sedgebrook Project), 6.25% due 3/01/2034
=====		
Iowa--2.5%	3,910	Iowa Finance Authority, Health Care Facilities, Revenue Refunding Bonds (Care Initiatives Project), 9.25% due 7/01/2025
=====		
Louisiana--3.1%	5,500	Port New Orleans, Louisiana, IDR, Refunding (Continental Grain Company Project), 7.50% due 7/01/2013
=====		
Maine--0.5%	840	Maine Finance Authority, Solid Waste Recycling Facilities Revenue Bonds (Great Northern Paper Project--Bowater), AMT, 7.75% due 10/01/2022
=====		
Maryland--0.8%	1,500	Maryland State Energy Financing Administration, Limited Obligation Revenue Bonds (Cogeneration--AES Warrior Run), AMT, 7.40% due 9/01/2019
=====		
Massachusetts--5.0%	1,845	Massachusetts State Development Finance Agency, First Mortgage Revenue Bonds (Overlook Communities Inc.), Series A, 6.25% due 7/01/2034
		Massachusetts State Development Finance Agency, Revenue Bonds (Eastern Nazarine College):

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1,245	5.625% due 4/01/2019
1,220	5.625% due 4/01/2029
850	Massachusetts State Health and Educational Facilities Authority Revenue Bonds (Jordan Hospital), Series E, 6.75% due 10/01/2033
	Massachusetts State Health and Educational Facilities Authority, Revenue Refunding Bonds:
2,115	(Bay Cove Human Services Issue), Series A, 5.90% due 4/01/2028
1,000	(Milton Hospital), Series, 5.50% due 7/01/2016
1,300	Massachusetts State Industrial Finance Agency Revenue Bonds, Sewer Facility (Resource Control Composting), AMT, 9.25% due 6/01/2010

APEX MUNICIPAL FUND, INC.

DECEMBER 31, 2004

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[LOGO] Merrill Lynch Investment Managers

Schedule of Investments (continued)

(in Thousands)

State	Face Amount	Municipal Bonds
Michigan--1.1%	\$ 1,000	Flint, Michigan, Hospital Building Authority, Revenue Refunding Bonds (Hurley Medical Center), Series A, 6% due 7/01/2020 (a)
	1,000	Michigan State Hospital Finance Authority, Revenue Refunding Bonds (Detroit Medical Center Obligation Group), Series A, 6.50% due 8/15/2018
Minnesota--1.1%	820	Minneapolis & Saint Paul, Minnesota, Metropolitan Airports Commission, Special Facilities Revenue Refunding Bonds (Northwest Airlines Inc. Project), AMT, 7.375% due 4/01/2025
	1,230	Saint Paul, Minnesota, Port Authority, Hotel Facility Revenue Refunding Bonds (Radisson Kellogg Project), Series 2, 7.375% due 8/01/2029
Missouri--1.2%	1,200	Fenton, Missouri, Tax Increment Revenue Refunding and Improvement Bonds (Gravois Bluffs), 7% due 10/01/2021
	1,000	Kansas City, Missouri, IDA, First Mortgage Health Facilities Revenue Bonds (Bishop Spencer Place), Series A, 6.50% due 1/01/2035
Nevada--0.2%	430	Clark County, Nevada, Improvement District No. 142 Special Assessment, 6.375% due 8/01/2023
New Jersey--15.3%		Camden County, New Jersey, Improvement Authority, Lease Revenue Bonds (Holt Hauling & Warehousing), AMT, Series A (d):
	2,000	9.625% due 1/01/2011 (e)
	4,500	9.875% due 1/01/2021
	6,000	Camden County, New Jersey, Pollution Control Financing Authority, Solid Waste Resource Recovery Revenue Refunding Bonds, AMT, Series A, 7.50% due 12/01/2010
	2,170	New Jersey EDA, Cigarette Tax Revenue Bonds, 5.50% due 6/15/2024

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	1,500	New Jersey EDA, IDR, Refunding (Newark Airport Marriott Hotel), 7% due 10/01/2014
		New Jersey EDA, Retirement Community Revenue Bonds, Series A:
	1,000	(Cedar Crest Village Inc. Facility), 7.25% due 11/15/2031
	3,700	(Seabrook Village Inc.), 8.125% due 11/15/2023
		New Jersey EDA, Special Facility Revenue Bonds (Continental Airlines Inc. Project), AMT:
	3,050	6.625% due 9/15/2012
	5,135	6.25% due 9/15/2029
	1,870	New Jersey Health Care Facilities Financing Authority Revenue Bonds (Pascack Valley Hospital Association), 6.625% due 7/01/2036
		Tobacco Settlement Financing Corporation of New Jersey Revenue Bonds:
	3,025	6.75% due 6/01/2039
	1,075	7% due 6/01/2041
=====		
New Mexico--2.8%	5,000	Farmington, New Mexico, PCR, Refunding (Tucson Electric Power Co.--San Juan Project), Series A, 6.95% due 10/01/2020
=====		
New York--3.9%	1,000	Dutchess County, New York, IDA, Civic Facility Revenue Bonds (Saint Francis Hospital), Series B, 7.50% due 3/01/2029
		New York City, New York, City IDA, Civic Facility Revenue Bonds:
	350	Series C, 6.80% due 6/01/2028
	1,495	(Special Needs Facility Pooled Program), Series C-1, 6.50% due 7/01/2024
	1,730	New York City, New York, City IDA, Special Facility Revenue Bonds (British Airways Plc Project), AMT, 7.625% due 12/01/2032
		Utica, New York, GO, Public Improvement:
	700	9.25% due 8/15/2005
	635	9.25% due 8/15/2006
	1,180	Westchester County, New York, IDA, Continuing Care Retirement, Mortgage Revenue Bonds (Kendal on Hudson Project), Series A, 6.50% due 1/01/2034
=====		
North Carolina--0.5%	1,000	North Carolina Medical Care Commission, Retirement Facilities, First Mortgage Revenue Bonds (Givens Estates Project), Series A, 6.50% due 7/01/2032
=====		
Oregon--0.7%	1,310	Western Generation Agency, Oregon, Cogeneration Project Revenue Bonds (Wauna Cogeneration Project), AMT, Series B, 7.40% due 1/01/2016

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APEX MUNICIPAL FUND, INC.

DECEMBER 31, 2004

Schedule of Investments (continued)

(in Thousands)

State	Face Amount	Municipal Bonds
=====		
Pennsylvania--5.3%	\$ 1,750	Chester County, Pennsylvania, Health and Education Facilities Authority, Senior Living Revenue Refunding Bonds (Jenners Pond Inc. Project), 7.625% due 7/01/2034
		Montgomery County, Pennsylvania, Higher Education and Health

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		Authority Revenue Bonds (Faulkeways at Gwynedd Project):
	900	6.75% due 11/15/2024
	925	6.75% due 11/15/2030
		Philadelphia, Pennsylvania, Authority for IDR:
	1,600	(Air Cargo), AMT, Series A, 7.50% due 1/01/2025
	4,460	Commercial Development, 7.75% due 12/01/2017
=====		
Tennessee--1.0%	1,800	Shelby County, Tennessee, Health, Educational and Housing Facilities Board Revenue Bonds (Germantown Village), Series A, 7.25% due 12/01/2034
=====		
Texas--10.0%	1,000	Austin, Texas, Convention Center Revenue Bonds (Convention Enterprises Inc.), First Tier, Series A, 6.70% due 1/01/2028
		Bell County, Texas, Health Facilities Development Corporation, Hospital Revenue Bonds (Scott & White Memorial Hospital), VRDN (b)(c):
	100	Series 2001-2, 1.98% due 8/15/2031
	100	Series B-2, 1.98% due 8/15/2029
		Brazos River Authority, Texas, PCR, Refunding, AMT:
	2,530	(Texas Utility Company), Series A, 7.70% due 4/01/2033
	2,760	(Utilities Electric Company), Series B, 5.05% due 6/01/2030
	1,220	Brazos River Authority, Texas, Revenue Refunding Bonds (Reliant Energy Inc. Project), Series B, 7.75% due 12/01/2018
	475	Dallas-Fort Worth, Texas, International Airport Facility, Improvement Corporation Revenue Bonds (Learjet Inc.), AMT, Series 2001-A-1, 6.15% due 1/01/2016
	1,660	Grand Prairie, Texas, Housing Finance Corporation Revenue Bonds (Independent Senior Living Center), 7.75% due 1/01/2034
	1,000	Houston, Texas, Health Facilities Development Corporation, Retirement Facility Revenue Bonds (Buckingham Senior Living Community), Series A, 7.125% due 2/15/2034
	945	Lufkin, Texas, Health Facilities Development Corporation, Health System Revenue Bonds (Memorial Health System of East Texas), 5.70% due 2/15/2028
	2,310	Matagorda County, Texas, Navigation District Number 1, Revenue Refunding Bonds (Reliant Energy Inc.), Series C, 8% due 5/01/2029
	1,330	Port Corpus Christi, Texas, Individual Development Corporation, Environmental Facilities Revenue Bonds (Citgo Petroleum Corporation Project), AMT, 8.25% due 11/01/2031
	2,000	Port Corpus Christi, Texas, Revenue Refunding Bonds (Celanese Project), AMT, Series B, 6.70% due 11/01/2030
=====		
Utah--1.2%	2,240	Carbon County, Utah, Solid Waste Disposal Revenue Refunding Bonds (Laidlaw Environmental), AMT, Series A, 7.45% due 7/01/2017
=====		
Virginia--6.0%	2,490	Dulles Town Center, Virginia, Community Development Authority, Special Assessment Tax (Dulles Town Center Project), 6.25% due 3/01/2026
	32,600	Pocahontas Parkway Association, Virginia, Toll Road Revenue Bonds, Senior Series B, 5.875%** due 8/15/2025
=====		
West Virginia--0.4%	875	Princeton, West Virginia, Hospital Revenue Refunding Bonds (Community Hospital Association Inc. Project), 6.20% due 5/01/2013
=====		
Wisconsin--0.7%	1,320	Wisconsin State Health and Educational Facilities Authority Revenue Bonds (New Castle Place Project), Series A, 7% due 12/01/2031

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Wyoming--1.0%           1,800   Sweetwater County, Wyoming, Solid Waste Disposal Revenue
                        Bonds (FMC Corporation Project), AMT, Series A, 7%
                        due 6/01/2024
    
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[LOGO] Merrill Lynch Investment Managers

Schedule of Investments (concluded) (in Thousands)

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                        Face
                        Amount   Municipal Bonds
=====
U.S. Virgin Islands   $ 2,100   Virgin Islands Government Refinery Facilities Revenue
--1.2%                Refunding Bonds (Hovenssa Coker Project), AMT, 6.50%
                        due 7/01/2021
-----
                        Total Municipal Bonds (Cost--$183,831)--98.5%
=====
Total Investments (Cost--$183,831*)--98.5%

Other Assets Less Liabilities--1.5%

Net Assets--100.0%
    
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* The cost and unrealized appreciation/depreciation of investments as of December 31, 2004, as computed for federal income tax purposes, were as follows:

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                                                    (in Thousands)
-----
Aggregate cost .....                               $ 183,612
                                                    =====
Gross unrealized appreciation .....              $   9,338
Gross unrealized depreciation .....                (8,932)
                                                    -----
Net unrealized appreciation .....                 $     406
                                                    =====
    
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** Represents a zero coupon; the interest rate shown reflects the effective yield at the time of purchase by the Fund.

- (a) ACA Insured
- (b) MBIA Insured.
- (c) Security has a maturity of more than one year, but has variable rate and demand features which qualify it as a short-term security. The rate disclosed is that currently in effect. This rate changes periodically based upon prevailing market rates.
- (d) Non-income producing--issuer filed for bankruptcy or is in default of interest payments.
- (e) Restricted securities as to resale:

(in Thousands)

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Issue	Acquisition Date	Cost	Value
Camden County, New Jersey, Improvement Authority, Lease Revenue Bonds (Holt Hauling & Warehousing), AMT, Series A, 9.625% due 1/01/2011	1/29/1997	\$2,116	\$263

See Notes to Financial Statements.

10 APEX MUNICIPAL FUND, INC. DECEMBER 31, 2004

Statement of Assets, Liabilities and Capital

As of December 31, 2004

Assets

Investments in unaffiliated securities, at value (identified cost--\$183,830,687)	
Cash	
Receivables:	
Interest	\$ 3,175,
Securities sold	546,
Prepaid expenses	
Total assets	

Liabilities

Payables:	
Securities purchased	788,
Investment adviser	115,
Dividends to shareholders	82,
Other affiliates	1,
Accrued expenses	
Total liabilities	

Net Assets

Net Assets

Capital

Common Stock, \$.10 par value, 150,000,000 shares authorized; 19,596,732 shares issued and outstanding	
Paid-in capital in excess of par	
Undistributed investment income--net	\$ 2,208,
Accumulated realized capital losses--net	(17,554,

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Unrealized appreciation--net	187,

Total accumulated losses--net	
Total capital--Equivalent to \$9.53 net asset value per share of Common Stock (market price--\$8.84)	

See Notes to Financial Statements.

APEX MUNICIPAL FUND, INC. DECEMBER 31, 2004 11

[LOGO] Merrill Lynch Investment Managers

Statement of Operations

For the Six Months Ended December 31, 2004

Investment Income

Interest

Expenses

Investment advisory fees	\$	606,
Accounting services		36,
Professional fees		23,
Printing and shareholder reports		22,
Transfer agent fees		20,
Listing fees		10,
Directors' fees and expenses		7,
Pricing fees		7,
Custodian fees		5,
Other		9,

Total expenses

Investment income--net

Realized & Unrealized Gain (Loss)--Net

Realized loss on investments

Change in unrealized appreciation/depreciation on investments

Total realized and unrealized gain--net

Net Increase in Net Assets Resulting from Operations

See Notes to Financial Statements.

12 APEX MUNICIPAL FUND, INC. DECEMBER 31, 2004

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Statements of Changes in Net Assets

	For the Months Ended December 2004
Increase (Decrease) in Net Assets:	
=====	
Operations	

Investment income--net	\$ 5,683,
Realized gain (loss)--net	(520,
Change in unrealized appreciation/depreciation--net	8,258,

Net increase in net assets resulting from operations	13,421,

Dividends & Distributions to Shareholders	

Investment income--net	(5,643,
Realized gain--net	-----
Net decrease in net assets resulting from dividends and distributions to shareholders	(5,643,

Net Assets	

Total increase in net assets	7,777,
Beginning of period	178,983,

End of period*	\$ 186,760,
	=====
* Undistributed investment income--net	\$ 2,208,
	=====

See Notes to Financial Statements.

APEX MUNICIPAL FUND, INC. DECEMBER 31, 2004 13

[LOGO] Merrill Lynch Investment Managers

Financial Highlights

The following per share data and ratios have been derived from information provided in the financial statements.	For the Six Months Ended December 31,		For the
Increase (Decrease) in Net Asset Value:	2004	2004	200
=====			
Per Share Operating Performance			

Net asset value, beginning of period ...	\$ 9.13	\$ 8.99	\$

Investment income--net29+	.60+	

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Realized and unrealized gain (loss)--net	.40	.11	
Total from investment operations69	.71	
Less dividends and distributions to Common Stock shareholders:			
Investment income--net	(.29)	(.57)	
Realized gain--net	--	--**	
Total dividends and distributions to Common Stock shareholders	(.29)	(.57)	
Net asset value, end of period	\$ 9.53	\$ 9.13	\$
Market price per share, end of period ..	\$ 8.84	\$ 8.26	\$
=====			
Total Investment Return*			
Based on net asset value per share	7.85%++	8.64%	
Based on market price per share	10.58%++	4.20%	
=====			
Average Net Assets			
Expenses80%@	.79%	
Investment income--net	6.09%@	6.52%	
=====			
Supplemental Data			
Net assets, end of period (in thousands)	\$ 186,761	\$ 178,983	\$ 176
Portfolio turnover	14%	19%	
=====			

* Total investment returns based on market value, which can be significantly greater or lesser than the net asset value, may result in substantially different returns. Total investment returns exclude the effect of sales charges.

** Amount is less than \$(.01) per share.

+ Based on average shares outstanding.

++ Aggregate total investment return.

@ Annualized.

See Notes to Financial Statements.

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APEX MUNICIPAL FUND, INC.

DECEMBER 31, 2004

Notes to Financial Statements

1. Significant Accounting Policies:

Apex Municipal Fund, Inc. (the "Fund") is registered under the Investment Company Act of 1940, as amended, as a non-diversified, closed-end management investment company. The Fund's financial statements are prepared in conformity with U.S. generally accepted accounting principles, which may require the use of

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management accruals and estimates. Actual results may differ from these estimates. These unaudited financial statements reflect all adjustments, which are, in the opinion of management, necessary to present a fair statement of the results for the interim period. All such adjustments are of a normal, recurring nature. The Fund determines and makes available for publication the net asset value of its Common Stock on a daily basis. The Fund's Common Stock is listed on the New York Stock Exchange under the symbol APX. The following is a summary of significant accounting policies followed by the Fund.

(a) Valuation of investments -- Municipal bonds are traded primarily in the over-the-counter markets and are valued at the last available bid price in the over-the-counter market or on the basis of values as obtained by a pricing service. Pricing services use valuation matrixes that incorporate both dealer-supplied valuations and valuation models. The procedures of the pricing service and its valuations are reviewed by the officers of the Fund under the general direction of the Board of Directors. Such valuations and procedures are reviewed periodically by the Board of Directors of the Fund. Financial futures contracts and options thereon, which are traded on exchanges, are valued at their closing prices as of the close of such exchanges. Options written or purchased are valued at the last sale price in the case of exchange-traded options. In the case of options traded in the over-the-counter market, valuation is the last asked price (options written) or the last bid price (options purchased). Swap agreements are valued by quoted fair values received daily by the Fund's pricing service. Short-term investments with a remaining maturity of 60 days or less are valued at amortized cost, which approximates market value, under which method the investment is valued at cost and any premium or discount is amortized on a straight line basis to maturity. Investments in open-end investment companies are valued at their net asset value each business day. Securities and other assets for which market quotations are not readily available are valued at fair value as determined in good faith by or under the direction of the Board of Directors of the Fund.

(b) Derivative financial instruments -- The Fund may engage in various portfolio investment strategies both to increase the return of the Fund and to hedge, or protect, its exposure to interest rate movements and movements in the securities markets. Losses may arise due to changes in the value of the contract or if the counterparty does not perform under the contract.

- o Financial futures contracts -- The Fund may purchase or sell financial futures contracts and options on such futures contracts. Futures contracts are contracts for delayed delivery of securities at a specific future date and at a specific price or yield. Upon entering into a contract, the Fund deposits and maintains as collateral such initial margin as required by the exchange on which the transaction is effected. Pursuant to the contract, the Fund agrees to receive from or pay to the broker an amount of cash equal to the daily fluctuation in value of the contract. Such receipts or payments are known as variation margin and are recorded by the Fund as unrealized gains or losses. When the contract is closed, the Fund records a realized gain or loss equal to the difference between the value of the contract at the time it was opened and the value at the time it was closed.
- o Options -- The Fund may write covered call options and purchase put options. When the Fund writes an option, an amount equal to the premium received by the Fund is reflected as an asset and an equivalent liability. The amount of the liability is subsequently marked-to-market to reflect the current market value of the option written. When a security is purchased or sold through an exercise of an option, the related premium paid (or received) is added to (or deducted from) the basis of the security acquired or deducted from (or added to) the proceeds of the security sold. When an option expires (or the Fund enters into a closing transaction), the Fund realizes a gain or loss on the option to the extent

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of the premiums received or paid (or gain or loss to the extent the cost of the closing transaction exceeds the premium paid or received).

Written and purchased options are non-income producing investments.

APEX MUNICIPAL FUND, INC.

DECEMBER 31, 2004

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[LOGO] Merrill Lynch Investment Managers

Notes to Financial Statements (concluded)

o Forward interest rate swaps -- The Fund may enter into forward interest rate swaps. In a forward interest rate swap, the Fund and the counterparty agree to make periodic net payments on a specified notional contract amount, commencing on a specified future effective date, unless terminated earlier. When the agreement is closed, the Fund records a realized gain or loss in an amount equal to the value of the agreement.

(c) Income taxes -- It is the Fund's policy to comply with the requirements of the Internal Revenue Code applicable to regulated investment companies and to distribute substantially all of its taxable income to its shareholders. Therefore, no federal income tax provision is required.

(d) Security transactions and investment income -- Security transactions are recorded on the dates the transactions are entered into (the trade dates). Realized gains and losses on security transactions are determined on the identified cost basis. Interest income is recognized on the accrual basis. The Fund amortizes all premiums and discounts on debt securities.

(e) Dividends and distributions -- Dividends from net investment income are declared daily and paid monthly. Distributions of capital gains are recorded on the ex-dividend dates.

2. Investment Advisory Agreement and Transactions with Affiliates:

The Fund has entered into an Investment Advisory Agreement with Fund Asset Management, L.P. ("FAM"). The general partner of FAM is Princeton Services, Inc. ("PSI"), an indirect, wholly-owned subsidiary of Merrill Lynch & Co., Inc. ("ML & Co."), which is the limited partner.

FAM is responsible for the management of the Fund's portfolio and provides the necessary personnel, facilities, equipment and certain other services necessary to the operations of the Fund. For such services, the Fund pays a monthly fee at an annual rate of .65% of the Fund's average daily net assets.

For the six months ended December 31, 2004, the Fund reimbursed FAM \$1,958 for certain accounting services.

Certain officers and/or directors of the Fund are officers and/or directors of FAM, PSI, and/or ML & Co.

3. Investments:

Purchases and sales of investments, excluding short-term securities, for the six months ended December 31, 2004 were \$25,115,544 and \$24,939,734, respectively.

4. Common Stock Transactions:

At December 31, 2004, the Fund had one class of shares of Common Stock, par value \$.10 per share, of which 150,000,000 shares were authorized.

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5. Subsequent Event:

On January 6, 2005, the Fund paid a tax-exempt income dividend to holders of Common Stock in the amount of \$.048000 per share, payable on January 28, 2005 to shareholders of record on January 19, 2005.

6. Capital Loss Carryforward:

On June 30, 2004, the Fund had a net capital loss carryforward of \$16,465,384, of which \$1,311,769 expires in 2005, \$938,156 expires in 2006, \$2,975,000 expires in 2008, \$5,341,699 expires in 2009, \$2,075,987 expires in 2010, \$2,163,492 expires in 2011 and \$1,659,281 expires in 2012. This amount will be available to offset like amounts of any future taxable gains.

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APEX MUNICIPAL FUND, INC.

DECEMBER 31, 2004

About Inverse Floaters

As a part of its investment strategy, the Fund may invest in certain securities whose potential income return is inversely related to changes in a floating interest rate ("inverse floaters"). In general, income on inverse floaters will decrease when short-term interest rates increase and increase when short-term interest rates decrease. Investments in inverse floaters may be characterized as derivative securities and may subject the Fund to the risks of reduced or eliminated interest payments and losses of invested principal. In addition, inverse floaters have the effect of providing investment leverage and, as a result, the market value of such securities will generally be more volatile than that of fixed rate, tax-exempt securities. To the extent the Fund invests in inverse securities, the market value of the Fund's portfolio and the net asset value of the Fund's shares may also be more volatile than if the Fund did not invest in these securities. As of December 31, 2004, none of the Fund's total net assets were invested in these securities.

Dividend Policy

The Fund's dividend policy is to distribute all or a portion of its net investment income to its shareholders on a monthly basis. In order to provide shareholders with a more stable level of dividend distributions, the Fund may at times pay out less than the entire amount of net investment income earned in any particular month and may at times in any particular month pay out such accumulated but undistributed income in addition to net investment income earned in that month. As a result, the dividends paid by the Fund for any particular month may be more or less than the amount of net investment income earned by the Fund during such month. The Fund's current accumulated but undistributed net investment income, if any, is disclosed in the Statement of Assets, Liabilities and Capital, which comprises part of the financial information included in this report.

APEX MUNICIPAL FUND, INC.

DECEMBER 31, 2004

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[LOGO] Merrill Lynch Investment Managers

Availability of Quarterly Schedule of Investments

The Fund files its complete schedule of portfolio holdings with the Securities and Exchange Commission ("SEC") for the first and third quarters of each fiscal year on Form N-Q. The Fund's Forms N-Q are available on the SEC's Web site at

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<http://www.sec.gov>. The Fund's Forms N-Q may also be reviewed and copied at the SEC's Public Reference Room in Washington, DC. Information on the operation of the Public Reference Room may be obtained by calling 1-800-SEC-0330.

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APEX MUNICIPAL FUND, INC.

DECEMBER 31, 2004

Electronic Delivery

The Fund offers electronic delivery of communications to its shareholders. In order to receive this service, you must register your account and provide us with e-mail information. To sign up for this service, simply access this Web site at <http://www.icsdelivery.com/live> and follow the instructions. When you visit this site, you will obtain a personal identification number (PIN). You will need this PIN should you wish to update your e-mail address, choose to discontinue this service and/or make any other changes to the service. This service is not available for certain retirement accounts at this time.

APEX MUNICIPAL FUND, INC.

DECEMBER 31, 2004

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[LOGO] Merrill Lynch Investment Managers

www.mlim.ml.com

Apex Municipal Fund, Inc. seeks to provide shareholders with high current income exempt from federal income taxes by investing primarily in a portfolio of medium-to-lower grade or unrated municipal obligations, the interest on which is exempt from federal income taxes in the opinion of bond counsel to the issuer.

This report, including the financial information herein, is transmitted to shareholders of Apex Municipal Fund, Inc. for their information. It is not a prospectus. Past performance results shown in this report should not be considered a representation of future performance. Statements and other information herein are as dated and are subject to change.

A description of the policies and procedures that the Fund uses to determine how to vote proxies relating to portfolio securities is available (1) without charge, upon request, by calling toll-free 1-800-MER-FUND (1-800-637-3863); (2) at www.mutualfunds.ml.com; and (3) on the Securities and Exchange Commission's Web site at <http://www.sec.gov>. Information about how the Fund voted proxies relating to securities held in the Fund's portfolio during the most recent 12-month period ended June 30 is available (1) at www.mutualfunds.ml.com and (2) on the Securities and Exchange Commission's Web site at <http://www.sec.gov>.

Apex Municipal Fund, Inc.
Box 9011
Princeton, NJ
08543-9011

#10955 -- 12/04

Item 2 - Code of Ethics - Not Applicable to this semi-annual report

Item 3 - Audit Committee Financial Expert - Not Applicable to this semi-annual report

Item 4 - Principal Accountant Fees and Services - Not Applicable to this semi-annual report

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- Item 5 - Audit Committee of Listed Registrants - Not Applicable to this semi-annual report
- Item 6 - Schedule of Investments - Not Applicable
- Item 7 - Disclosure of Proxy Voting Policies and Procedures for Closed-End Management Investment Companies - Not Applicable to this semi-annual report
- Item 8 - Portfolio Managers of Closed-End Management Investment Companies - Not Applicable to this semi-annual report
- Item 9 - Purchases of Equity Securities by Closed-End Management Investment Company and Affiliated Purchasers - Not Applicable
- Item 10 - Submission of Matters to a Vote of Security Holders - Not Applicable
- Item 11 - Controls and Procedures
 - 11(a) - The registrant's certifying officers have reasonably designed such disclosure controls and procedures to ensure material information relating to the registrant is made known to us by others particularly during the period in which this report is being prepared. The registrant's certifying officers have determined that the registrant's disclosure controls and procedures are effective based on our evaluation of these controls and procedures as of a date within 90 days prior to the filing date of this report.
 - 11(b) - There were no changes in the registrant's internal control over financial reporting (as defined in Rule 30a-3(d) under the Act (17 CFR 270.30a-3(d)) that occurred during the last fiscal half-year of the period covered by this report that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting.
- Item 12 - Exhibits attached hereto
 - 12(a) (1) - Code of Ethics - Not Applicable to this semi-annual report
 - 12(a) (2) - Certifications - Attached hereto
 - 12(a) (3) - Not Applicable
 - 12(b) - Certifications - Attached hereto

Pursuant to the requirements of the Securities Exchange Act of 1934 and the Investment Company Act of 1940, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

Apex Municipal Fund, Inc.

By: /s/ Robert C. Doll, Jr.

Robert C. Doll, Jr.,
President of
Apex Municipal Fund, Inc.

Date: February 24, 2005

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Pursuant to the requirements of the Securities Exchange Act of 1934 and the Investment Company Act of 1940, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

By: /s/ Robert C. Doll, Jr.

Robert C. Doll, Jr.,
President of
Apex Municipal Fund, Inc.

Date: February 24, 2005

By: /s/ Donald C. Burke

Donald C. Burke,
Chief Financial Officer of
Apex Municipal Fund, Inc.

Date: February 24, 2005