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BLACKROCK MUNIVEST FUND INC
 Form N-Q
 July 27, 2007

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

FORM N-Q

QUARTERLY SCHEDULE OF PORTFOLIO HOLDINGS OF REGISTERED
 MANAGEMENT INVESTMENT COMPANY

Investment Company Act File number 811-5611

Name of Fund: BlackRock MuniVest Fund, Inc.

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

Name and address of agent for service: Robert C. Doll, Jr., Chief Executive
 Officer, BlackRock MuniVest 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: 08/31/2007

Date of reporting period: 03/01/07 - 05/31/07

Item 1 - Schedule of Investments

BlackRock MuniVest Fund, Inc.
 Schedule of Investments as of May 31, 2007 (Unaudited) (in Thousands)

| State | Face Amount | Municipal Bonds |
|----------------|-------------|--|
| Alabama - 3.9% | \$ 2,550 | Camden, Alabama, IDB, Exempt Facilities Revenue Bonds (Weyerhae Series A, 6.125% due 12/01/2024 |
| | 3,500 | Huntsville, Alabama, Health Care Authority Revenue Bonds, Serie 6/01/2011 (a) |
| | 5,000 | Huntsville, Alabama, Health Care Authority Revenue Bonds, Serie 6/01/2012 (a) |
| | 6,500 | Prattville, Alabama, IDB, Environmental Improvement Revenue Bon Paper Company Projects), AMT, Series A, 4.75% due 12/01/2030 |
| | 5,000 | Selma, Alabama, IDB, Environmental Improvement Revenue Refundin Paper Company Project), Series B, 5.50% due 5/01/2020 |
| Arizona - 1.9% | 4,100 | Maricopa County, Arizona, IDA, Education Revenue Bonds (Arizona Project 1), Series A, 6.75% due 7/01/2029 |
| | 2,100 | Pima County, Arizona, IDA, Education Revenue Bonds (Arizona Cha Series E, 7.25% due 7/01/2031 |
| | 500 | Pima County, Arizona, IDA, Education Revenue Bonds (Arizona Cha Series I, 6.10% due 7/01/2024 |
| | 1,000 | Pima County, Arizona, IDA, Education Revenue Bonds (Arizona Cha |

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| | | |
|--------------------|--------|---|
| | | Series I, 6.30% due 7/01/2031 |
| | 560 | Pima County, Arizona, IDA, Education Revenue Refunding Bonds (A |
| | | Project II), Series A, 6.75% due 7/01/2011 (a) |
| | 1,005 | Pima County, Arizona, IDA, Education Revenue Refunding Bonds (A |
| | | Project II), Series A, 6.75% due 7/01/2021 |
| | 1,545 | Pima County, Arizona, IDA, Education Revenue Refunding Bonds (A |
| | | Project), Series O, 5% due 7/01/2026 |
| ----- | | |
| California - 22.4% | 9,290 | California HFA, Home Mortgage Revenue Bonds, AMT, Series E, 4.7 |
| | 18,850 | California Health Facilities Financing Authority Revenue Bonds |
| | | Series A, 5.25% due 4/01/2039 |
| ----- | | |

Portfolio Abbreviations

To simplify the listings of BlackRock MuniVest Fund, Inc.'s portfolio holdings in the Schedule of Investments, we have abbreviated the names of many of the securities according to the list below.

| | |
|---------|--|
| AMT | Alternative Minimum Tax (subject to) |
| DRIVERS | Derivative Inverse Tax-Exempt Receipts |
| EDA | Economic Development Authority |
| GO | General Obligation Bonds |
| HDA | Housing Development Authority |
| HFA | Housing Finance Agency |
| IDA | Industrial Development Authority |
| IDB | Industrial Development Board |
| IDR | Industrial Development Revenue Bonds |
| M/F | Multi-Family |
| PCR | Pollution Control Revenue Bonds |
| RIB | Residual Interest Bonds |
| S/F | Single-Family |
| VRDN | Variable Rate Demand Notes |

BlackRock MuniVest Fund, Inc.
 Schedule of Investments as of May 31, 2007 (Unaudited) (in Thousands)

| State | Face Amount | Municipal Bonds |
|-------|-------------|--|
| ----- | | |
| | \$ 10,665 | California State, GO, 5.50% due 4/01/2014 (a) |
| | 10 | California State, GO, 5.50% due 4/01/2030 |
| | 5,000 | California State Public Works Board, Lease Revenue Bonds (Depart |
| | | Series C, 5.50% due 6/01/2022 |
| | 6,000 | California State Public Works Board, Lease Revenue Bonds (Depart |
| | | Series C, 5.50% due 6/01/2023 |
| | 11,075 | California State Public Works Board, Lease Revenue Bonds (Depart |
| | | - Coalinga State Hospital), Series A, 5.125% due 6/01/2029 |
| | 11,250 | California State, Various Purpose, GO, 5.50% due 11/01/2033 |
| | 5,240 | California Statewide Communities Development Authority, Health |
| | | (Memorial Health Services), Series A, 6% due 10/01/2023 |
| | 1,250 | Chula Vista, California, IDR (San Diego Gas and Electric Compan |
| | | due 12/01/2027 |
| | 10,725 | Golden State Tobacco Securitization Corporation of California, |
| | | Revenue Bonds, Series A-3, 7.875% due 6/01/2013 (a) |
| | 3,750 | Golden State Tobacco Securitization Corporation of California, |

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|--------------------|--------|--|
| | 1,425 | Revenue Bonds, Series A-4, 7.80% due 6/01/2013 (a) Golden State Tobacco Securitization Corporation of California, |
| | 13,900 | Revenue Bonds, Series A-5, 7.875% due 6/01/2013 (a) Golden State Tobacco Securitization Corporation of California, |
| | 14,800 | Revenue Bonds, Series B, 5.375% due 6/01/2010 (a) Golden State Tobacco Securitization Corporation of California, |
| | 3,300 | Revenue Refunding Bonds, Senior Series A-1, 5.125% due 6/01/204 Golden State Tobacco Securitization Corporation of California, |
| | | Revenue Refunding Bonds, Senior Series A-1, 5.75% due 6/01/2047 |
| Colorado - 1.1% | 2,500 | Colorado HFA, Revenue Refunding Bonds (Adventist Health System/ Series D, 5.125% due 11/15/2029 |
| | 560 | Colorado HFA, Revenue Refunding Bonds (S/F Program), AMT, Senio due 5/01/2028 |
| | 200 | Colorado HFA, Revenue Refunding Bonds (S/F Program), AMT, Senio due 4/01/2031 |
| | 3,000 | Colorado Health Facilities Authority Revenue Bonds (Lutheran Me Series A, 5.25% due 6/01/2034 |
| Connecticut - 0.5% | 2,810 | Mohegan Tribe Indians Gaming Authority, Connecticut, Public Imp Refunding Bonds (Priority Distribution), 6.25% due 1/01/2031 |
| Florida - 4.8% | 6,000 | Highlands County, Florida, Health Facilities Authority, Hospita (Adventist Health System), Series C, 5.25% due 11/15/2036 |
| | 11,460 | Highlands County, Florida, Health Facilities Authority, Hospita Bonds (Adventist Health System), Series G, 5.125% due 11/15/203 |
| | 10,320 | Orange County, Florida, Health Facilities Authority, Hospital R (Adventist Health System), 5.625% due 11/15/2012 (a) |

BlackRock MuniVest Fund, Inc.

Schedule of Investments as of May 31, 2007 (Unaudited)

(in Thousands)

| State | Face Amount | Municipal Bonds |
|------------------|-------------|--|
| Georgia - 3.4% | \$ 1,100 | Gainesville, Georgia, Redevelopment Authority, Educational Faci Refunding Bonds (Riverside Military Academy), 5.125% due 3/01/2 |
| | 250 | Georgia Municipal Electric Authority, Power Revenue Refunding B due 1/01/2018 (e) |
| | 4,600 | Georgia Municipal Electric Authority, Power Revenue Refunding B due 1/01/2018 |
| | 250 | Georgia Municipal Electric Authority, Power Revenue Refunding B due 1/01/2010 (e) |
| | 4,390 | Milledgeville-Baldwin County, Georgia, Development Authority Re College and State University Foundation), 5.50% due 9/01/2014 (|
| | 3,500 | Milledgeville-Baldwin County, Georgia, Development Authority Re College and State University Foundation), 5.625% due 9/01/2014 |
| | 4,785 | Monroe County, Georgia, Development Authority, PCR, Refunding (C Corporation-Scherer), Series A, 6.80% due 1/01/2011 |
| Idaho - 0.1% | 330 | Idaho Housing Agency, S/F Mortgage Revenue Refunding Bonds, AM due 1/01/2027 |
| Illinois - 11.5% | 5,000 | Chicago, Illinois, O'Hare International Airport, General Airpor Bonds, Third Lien, AMT, Series A, 5.75% due 1/01/2019 (c) |

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|--------|--|
| 11,200 | Chicago, Illinois, O'Hare International Airport Revenue Bonds, Series B-2, 6% due 1/01/2029 (n) |
| 75 | Chicago, Illinois, S/F Mortgage Revenue Bonds, AMT, Series C, 7 |
| 10,000 | Hodgkins, Illinois, Environmental Improvement Revenue Bonds (Management LLC Project), AMT, 6% due 11/01/2023 |
| 2,140 | Illinois Development Finance Authority Revenue Bonds (Community Providers Facilities), Series A, 6.50% due 7/01/2022 |
| 1,365 | Illinois Development Finance Authority, Revenue Refunding Bonds (Rehabilitation Providers Facilities), Series A, 6% due 7/01/201 |
| 455 | Illinois HDA, Revenue Refunding Bonds (M/F Program), Series 5, |
| 2,695 | Illinois State Finance Authority, Revenue Bonds (Community Reha Facilities), 4.625% due 7/01/2027 |
| 13 | Kane and De Kalb Counties, Illinois, Community Unit School Dist DRIVERS, Series 283, 7.313% due 2/01/2018 (f)(m) |
| 1,005 | McLean and Woodford Counties, Illinois, Community Unit School D GO, Refunding, 6.25% due 12/01/2014 (i) |
| 845 | McLean and Woodford Counties, Illinois, Community Unit School D GO, Refunding, 6.375% due 12/01/2016 (i) |
| 18,550 | Metropolitan Pier and Exposition Authority, Illinois, Dedicated Refunding Bonds (McCormick Place Expansion Project), Series B, |

BlackRock MuniVest Fund, Inc.

Schedule of Investments as of May 31, 2007 (Unaudited)

(in Thousands)

| State | Face Amount | Municipal Bonds |
|------------------|-------------|---|
| | \$ 3,500 | Regional Transportation Authority, Illinois, Revenue Bonds, Ser 11/01/2020 (h) |
| | 4,000 | Regional Transportation Authority, Illinois, Revenue Bonds, Ser 6/01/2020 (f) |
| | 1,870 | Will County, Illinois, School District Number 122 (New Lenox EL Series A, 6.50% due 11/01/2010 (a)(i) |
| | 505 | Will County, Illinois, School District Number 122 (New Lenox EL Series A, 6.50% due 11/01/2013 (i) |
| ----- | | |
| Indiana - 9.0% | 16,350 | Indiana Health and Educational Facilities Financing Authority, (Clarian Health Obligation), Series A, 5.25% due 2/15/2040 |
| | 6,500 | Indiana Health and Educational Facilities Financing Authority, Refunding Bonds (Clarian Health Obligation), Series B, 5% due 2 |
| | 4,290 | Indiana State, HFA, S/F Mortgage Revenue Refunding Bonds, Serie 1/01/2017 (j) |
| | 8,195 | Indiana Transportation Finance Authority, Highway Revenue Bonds 12/01/2016 |
| | 15,335 | Indianapolis, Indiana, Local Public Improvement Bond Bank, Reve Series D, 6.75% due 2/01/2014 |
| ----- | | |
| Kansas - 0.6% | 3,805 | Sedgwick and Shawnee Counties, Kansas, S/F Mortgage Revenue Bon Securities Program), AMT, Series A-4, 5.95% due 12/01/2033 (d) |
| ----- | | |
| Kentucky - 3.5% | 20,100 | Louisville and Jefferson County, Kentucky, Metropolitan Governm Revenue Refunding Bonds (Norton Healthcare, Inc.), 5.25% due 10 |
| ----- | | |
| Louisiana - 3.1% | 6,220 | Louisiana Public Facilities Authority, Hospital Revenue Bonds (Missionaries of Our Lady Health System, Inc.), Series A, 5% due |
| | 11,660 | Louisiana Public Facilities Authority, Hospital Revenue Bonds (|

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| Missionaries of Our Lady Health System, Inc.), Series A, 5.25% | | |
|--|--------|---|
| Maine - 0.3% | 775 | Portland, Maine, Housing Development Corporation, Senior Living Housing Development Corporation Project), Series A, 5.70% due 8/1/2019 |
| | 1,190 | Portland, Maine, Housing Development Corporation, Senior Living Housing Development Corporation Project), Series A, 6% due 2/01/2019 |
| Maryland - 2.0% | 9,030 | Maryland State Community Development Administration, Department of Community Development, Residential Revenue Refunding Bonds, AMT, due 9/01/2037 |
| | 3,250 | Maryland State Community Development Administration, Department of Community Development, Residential Revenue Refunding Bonds, AMT, due 9/01/2042 |
| Massachusetts - 8.1% | 2,035 | Boston, Massachusetts, Water and Sewer Commission Revenue Bonds |
| | 3,010 | Massachusetts Bay Transportation Authority, Revenue Refunding Bonds (Transportation System), Series A, 7% due 3/01/2019 |
| | 3,955 | Massachusetts State, HFA, Housing Revenue Refunding Bonds, AMT, due 6/01/2040 |
| | 30,000 | Massachusetts State Water Resource Authority Revenue Bonds, Series A, due 7/15/2019 (e) |
| | 3,480 | Massachusetts State Water Resource Authority, Revenue Refunding Bonds, due 8/01/2010 (a) (f) |

BlackRock MuniVest Fund, Inc.

Schedule of Investments as of May 31, 2007 (Unaudited)

(in Thousands)

| State | Face Amount | Municipal Bonds |
|-----------------|-------------|--|
| Michigan - 8.6% | \$ 2,500 | Delta County, Michigan, Economic Development Corporation, Environmental Revenue Refunding Bonds (Mead Westvaco-Escanaba), Series A, 6.25% due 11/15/2025 |
| | 3,715 | Macomb County, Michigan, Hospital Finance Authority, Hospital Revenue Refunding Bonds (Clemens General Hospital), Series B, 5.75% due 11/15/2025 |
| | 4,250 | Macomb County, Michigan, Hospital Finance Authority, Hospital Revenue Refunding Bonds (Clemens General Hospital), Series B, 5.875% due 11/15/2034 |
| | 1,900 | Michigan State Hospital Finance Authority, Hospital Revenue Refunding Bonds (Crittenton Hospital), Series A, 5.625% due 3/01/2027 |
| | 3,125 | Michigan State Hospital Finance Authority, Hospital Revenue Refunding Bonds (Obligated Group), Series A, 5% due 7/15/2025 |
| | 2,000 | Michigan State Hospital Finance Authority, Hospital Revenue Refunding Bonds (Obligated Group), Series A, 5% due 7/15/2037 |
| | 5,500 | Michigan State Hospital Finance Authority, Hospital Revenue Refunding Bonds (Obligated Group), 5% due 11/15/2031 |
| | 3,650 | Michigan State Hospital Finance Authority Revenue Bonds (Mid-Michigan), Series A, 5% due 4/15/2036 |
| | 9,000 | Michigan State Hospital Finance Authority Revenue Bonds (Trinity Hospital Group), Series A, 5% due 12/01/2031 |
| | 3,000 | Michigan State Hospital Finance Authority, Revenue Refunding Bonds (Transportation System), Series A, 5.25% due 11/15/2032 |
| | 10,600 | Michigan State Hospital Finance Authority, Revenue Refunding Bonds (Transportation System), Series A, 5% due 11/15/2038 |
| | 1,000 | Michigan State Hospital Finance Authority, Revenue Refunding Bonds, 6.70% due 1/01/2026 |

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|--------------------|--------|--|
| Minnesota - 1.5% | 7,235 | Minneapolis, Minnesota, Health Care System Revenue Bonds (Allin Series A, 5.75% due 11/15/2032 |
| | 1,405 | Saint Cloud, Minnesota, Health Care Revenue Refunding Bonds (Sa Obligation Group), Series A, 6.25% due 5/01/2017 (i) |
| Mississippi - 6.2% | 9,160 | Lowndes County, Mississippi, Solid Waste Disposal and PCR, Refu Company Project), Series A, 6.80% due 4/01/2022 |
| | 4,500 | Lowndes County, Mississippi, Solid Waste Disposal and PCR, Refu Company Project), Series B, 6.70% due 4/01/2022 |
| | 20,705 | Mississippi Business Finance Corporation, Mississippi, PCR, Ref Resources Inc. Project), 5.875% due 4/01/2022 |
| Missouri - 0.5% | 2,600 | Missouri State Development Finance Board, Infrastructure Facili Bonds (Branson), Series A, 5.50% due 12/01/2032 |
| | 220 | Missouri State Housing Development Commission, S/F Mortgage Rev Loan), AMT, Series A, 7.50% due 3/01/2031 (d) |

BlackRock MuniVest Fund, Inc.

Schedule of Investments as of May 31, 2007 (Unaudited)

(in Thousands)

| State | Face Amount | Municipal Bonds |
|----------------------|-------------|--|
| Montana - 1.0% | \$ 6,000 | Forsyth, Montana, PCR, Refunding (Portland General Electric Com due 5/01/2033 |
| Nebraska - 0.1% | 285 | Nebraska Investment Finance Authority, S/F Housing Revenue Bond due 9/01/2028 (d) (k) |
| Nevada - 0.2% | 1,140 | Nevada Housing Division Revenue Bonds (Multi-Unit Housing), AMT 10/01/2017 (b) |
| | 5 | Nevada Housing Division Revenue Bonds (S/F Program), AMT, Serie 10/01/2012 (j) |
| New Hampshire - 0.5% | 2,675 | New Hampshire Health and Education Facilities Authority, Revenue (Elliot Hospital), Series B, 5.60% due 10/01/2022 |
| New Jersey - 6.1% | 9,080 | New Jersey EDA, Cigarette Tax Revenue Bonds, 5.50% due 6/15/202 |
| | 2,885 | New Jersey EDA, Cigarette Tax Revenue Bonds, 5.75% due 6/15/202 |
| | 2,855 | New Jersey EDA, Cigarette Tax Revenue Bonds, 5.50% due 6/15/203 |
| | 6,695 | New Jersey EDA, Cigarette Tax Revenue Bonds, 5.75% due 6/15/203 |
| | 5,980 | Tobacco Settlement Financing Corporation of New Jersey, Asset-B 7% due 6/01/2013 (a) |
| | 7,500 | Tobacco Settlement Financing Corporation of New Jersey, Revenue Series 1A, 5% due 6/01/2041 |
| New Mexico - 0.6% | 3,300 | Farmington, New Mexico, PCR, Refunding (Public Service Company Juan Project), Series A, 5.80% due 4/01/2022 |
| New York - 1.9% | 400 | Metropolitan Transportation Authority, New York, Dedicated Tax Refunding Bonds, VRDN, Series B, 3.82% due 11/01/2022 (i) (l) |
| | 1,125 | New York City, New York, City Transitional Finance Authority Re Series 283, 8.40% due 11/15/2015 (m) |
| | 965 | New York City, New York, GO, Refunding, Series A, 6.375% due 5/ |
| | 6,480 | New York City, New York, GO, Series F, 5.25% due 1/15/2033 |

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| | 20 | New York City, New York, GO, Series I, 6.25% due 4/15/2017 (n) |
| | 400 | New York State Local Government Assistance Corporation, Revenue Sub-Lien, VRDN, Series 4V, 3.73% due 4/01/2022 (i) (l) |
| | 1,200 | Triborough Bridge and Tunnel Authority, New York, General Purpose Bonds, VRDN, Series C, 3.70% due 1/01/2032 (h) (l) |
| ----- | | |
| North Carolina - 0.7% | 4,105 | Gaston County, North Carolina, Industrial Facilities and Pollution Authority, Revenue Bonds (National Gypsum Company Project), AMT |
| ----- | | |
| Ohio - 0.6% | 2,500 | Ohio HFA, Mortgage Revenue Refunding Bonds, AMT, Series A, 4.90% |
| | 1,000 | Richland County, Ohio, Hospital Facilities Revenue Refunding Bond System), 5.25% due 11/15/2036 |
| ----- | | |
| Oklahoma - 1.0% | 5,750 | Oklahoma Development Finance Authority, Revenue Refunding Bonds System), 5% due 2/15/2038 |
| ----- | | |
| Pennsylvania - 4.1% | 2,440 | Pennsylvania State Higher Education Assistance Agency Revenue Bonds Acquisition, 6.125% due 12/15/2010 (a) (c) |

BlackRock MuniVest Fund, Inc.

Schedule of Investments as of May 31, 2007 (Unaudited)

(in Thousands)

| State | Face Amount | Municipal Bonds |
|-----------------------|-------------|---|
| | \$ 6,250 | Pennsylvania State Higher Educational Facilities Authority Revenue Bonds (University of Pennsylvania Medical Center Health System), Series A, 6% due 12/01/2011 (a) |
| | 1,000 | Philadelphia, Pennsylvania, Authority for Industrial Development Revenue Bonds (Arbor House Inc. Project), Series E, 6.10% due 7/01/2011 (a) |
| | 1,355 | Philadelphia, Pennsylvania, Authority for Industrial Development Revenue Bonds (Rieder House Project), Series A, 6.10% due 7/01/2011 (a) |
| | 9,280 | Sayre, Pennsylvania, Health Care Facilities Authority, Revenue Bonds (Healthcare System), Series B, 7.125% due 12/01/2011 (a) |
| | 1,340 | Sayre, Pennsylvania, Health Care Facilities Authority, Revenue Bonds (Guthrie Healthcare System), Series A, 6.25% due 12/01/2011 (a) |
| | 410 | Sayre, Pennsylvania, Health Care Facilities Authority, Revenue Bonds (Guthrie Healthcare System), Series A, 6.25% due 12/01/2018 |
| ----- | | |
| South Carolina - 2.1% | 1,000 | Georgetown County, South Carolina, Environmental Improvement Revenue Bonds (International Paper Company Project), AMT, Series A, 5.55% due 11/01/2032 |
| | 3,500 | Lexington County, South Carolina, Health Services District Inc. Refunding and Improvement Bonds, 5.50% due 11/01/2032 |
| | 2,450 | Medical University Hospital Authority, South Carolina, Hospital Refunding Bonds, 6.50% due 8/15/2012 (a) |
| | 5,000 | Richland County, South Carolina, Environmental Improvement Revenue Bonds (International Paper), AMT, 6.10% due 4/01/2023 |
| ----- | | |
| South Dakota - 0.4% | 2,605 | South Dakota State Health and Educational Facilities Authority (Sanford Health), 5% due 11/01/2040 |
| ----- | | |
| Tennessee - 1.6% | 2,000 | McMinn County, Tennessee, IDB, Solid Waste Revenue Bonds (Recycling Newsprint), AMT, 7.40% due 12/01/2022 |
| | 6,500 | Shelby County, Tennessee, Health, Educational and Housing Facilities Revenue Refunding Bonds (Methodist Healthcare), 6.50% due 9/01/2032 |
| ----- | | |
| Texas - 14.1% | 7,290 | Austin, Texas, Convention Center Revenue Bonds (Convention Entertainment Center), 6.50% due 12/01/2011 (a) |

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|--------|---|
| | Tier, Series A, 6.70% due 1/01/2011 (a) |
| 3,055 | Brazos River Authority, Texas, PCR, Refunding (TXU Energy Compa Series A, 7.70% due 4/01/2033 |
| 3,345 | Brazos River, Texas, Harbor Navigation District, Brazoria Count Chemical Company Project), Series B-2, 4.95% due 5/15/2033 |
| 11,460 | Brazos River, Texas, Harbor Navigation District, Brazoria Count Revenue Refunding Bonds (Dow Chemical Company Project), AMT, Se 5/15/2033 |
| 3,000 | Gregg County, Texas, Health Facilities Development Corporation, Bonds (Good Shepherd Medical Center Project), 6.875% due 10/01/ |

BlackRock MuniVest Fund, Inc.

Schedule of Investments as of May 31, 2007 (Unaudited)

(in Thousands)

| State | Face Amount | Municipal Bonds |
|-------------------|----------------|---|
| | \$ 10,250 | Guadalupe-Blanco River Authority, Texas, Sewage and Solid Waste Revenue Bonds (E. I. du Pont de Nemours and Company Project), A 4/01/2026 |
| | 6,000 | Gulf Coast Waste Disposal Authority, Texas, Revenue Refunding B Paper Company), AMT, Series A, 6.10% due 8/01/2024 |
| | 5,500 | Harris County-Houston Sports Authority, Texas, Revenue Refundin Series G, 5.75% due 11/15/2020 (c) |
| | 1,790 | Houston, Texas, Industrial Development Corporation Revenue Bond 6.375% due 1/01/2023 |
| | 1,875 | Mansfield, Texas, Independent School District, GO, Refunding, 6 |
| | 155 | Mansfield, Texas, Independent School District, GO, Refunding, 6 |
| | 9,355 | Matagorda County, Texas, Navigation District Number 1, Revenue (Centerpoint Energy Project), 5.60% due 3/01/2027 |
| | 5,225 | Midway, Texas, Independent School District, GO, Refunding, 6.12 |
| | 2,700 | Port Corpus Christi, Texas, Revenue Refunding Bonds (Celanese P 6.45% due 11/01/2030 |
| | 5,000 | Red River Authority, Texas, PCR, Refunding (Celanese Project), due 11/01/2030 |
| | 3,930 | Sabine River Authority, Texas, PCR, Refunding (TXU Electric Com Energy Company LLC), Series C, 5.20% due 5/01/2028 |
| Vermont - 0.2% | 1,000 | Vermont Educational and Health Buildings Financing Agency, Deve Health Revenue Bonds (Howard Center for Human Services), Series 6/15/2022 |
| Virginia - 0.6% | 1,425 | Chesterfield County, Virginia, IDA, PCR (Virginia Electric and Series A, 5.875% due 6/01/2017 |
| | 2,250 | Fairfax County, Virginia, EDA, Residential Care Facilities, Mon Refunding Bonds (Goodwin House, Inc.), 5.125% due 10/01/2042 |
| Washington - 4.6% | 3 | Energy Northwest, Washington, Electric Revenue Refunding Bonds, 7.811% due 7/01/2018 (h) (m) |
| | 2,370 | Seattle, Washington, Housing Authority Revenue Bonds (Replaceme 6.125% due 12/01/2032 |
| | 407 | Washington State, GO, Trust Receipts, Class R, Series 6, 7.84% |
| | 7,800 | Washington State Housing Financing Commission, S/F Program Reve Series 2A, 4.70% due 12/01/2038 (d) (k) |
| | 14,320 | Washington State Public Power Supply System, Revenue Refunding Number 1), Series B, 7.125% due 7/01/2016 |

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| Wisconsin - 1.7% | 1,765 | Milwaukee, Wisconsin, Revenue Bonds (Air Cargo), AMT, 6.50% due |
| | 5,000 | Wisconsin State Health and Educational Facilities Authority, MO (Hudson Memorial Hospital), 5.70% due 1/15/2029 (j) |
| | 3,040 | Wisconsin State Health and Educational Facilities Authority Rev (SynergyHealth Inc.), 6% due 11/15/2032 |

BlackRock MuniVest Fund, Inc.

Schedule of Investments as of May 31, 2007 (Unaudited)

(in Thousands)

| State | Face Amount | Municipal Bonds |
|-----------------------------------|-------------|--|
| U.S. Virgin Islands - 1.5% | \$ 8,000 | Virgin Islands Government Refinery Facilities, Revenue Refundin Project), AMT, 6.50% due 7/01/2021 |
| | | Total Municipal Bonds (Cost - \$778,208) - 136.6% |
| Municipal Bonds Held in Trust (r) | | |
| Illinois - 7.5% | 14,000 | Chicago, Illinois, O'Hare International Airport, General Airpor Bonds, Third Lien, AMT, Series A, 5.75% due 1/01/2020 (c) |
| | 17,080 | Chicago, Illinois, O'Hare International Airport Revenue Bonds, Series B-2, 6% due 1/01/2027 (c) |
| | 2,975 | Kane and De Kalb Counties, Illinois, Community Unity School Dis 5.75% due 2/01/2018 (f) |
| | 2,710 | Kane and De Kalb Counties, Illinois, Community Unity School Dis 5.75% due 2/01/2019 (f) |
| | 4,780 | Kane and De Kalb Counties, Illinois, Community Unity School Dis 5.75% due 2/01/2021 (f) |
| Massachusetts - 3.4% | 20,000 | Massachusetts State School Building Authority, Dedicated Sales Series A, 5% due 8/15/2030 (i) |
| New York - 7.2% | 13,500 | New York City, New York, City Transitional Finance Authority Re Tax Secured, Series B, 6.25% due 11/15/2018 |
| | 26,750 | New York State Dormitory Authority, State University Educationa Refunding Bonds, Series 1989, 6% due 5/15/2010 (a) (c) |
| Oregon - 1.2% | 6,610 | Portland, Oregon, Sewer System Revenue Bonds, Series A, 5.75% d |
| Texas - 6.3% | 20,970 | Harris County, Texas, Health Facilities Development Corporation Bonds (School Health Care System), Series B24, 6.80% due 7/01/202 |
| | 12,500 | San Antonio, Texas, Electric and Gas Revenue Bonds, Series A, |
| Washington - 8.7% | 11,660 | Energy Northwest, Washington, Electric Revenue Refunding Bonds Station), Series A, 5.75% due 7/01/2018 (c) |
| | 7,015 | Energy Northwest, Washington, Electric Revenue Refunding Bonds Station), Series B, 6% due 7/01/2018 (h) |
| | 14,700 | Energy Northwest, Washington, Electric Revenue Refunding Bonds Series B, 6% due 7/01/2017 (c) |
| | 15,385 | Washington State, Various Purpose, GO, Series B, 6% due 1/01/20 |
| | | Total Municipal Bonds Held in Trust (Cost - \$199,204) - 34.3% |

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BlackRock MuniVest Fund, Inc.

Schedule of Investments as of May 31, 2007 (Unaudited)

(in Thousands)

| Shares Held | Short-Term Securities |
|----------------|--|
| 8,700 | Merrill Lynch Institutional Tax-Exempt Fund, 3.60% (p) (q) |
| | Total Short-Term Securities (Cost - \$8,700) - 1.4% |
| | Total Investments (Cost - \$986,112*) - 172.3% |
| | Liabilities in Excess of Other Assets - (0.4%) |
| | Liability for Trust Certificates, Including Interest Expense |
| | Preferred Stock, at Redemption Value - (55.5%) |
| | Net Assets Applicable to Common Stock - 100.0% |

* The cost and unrealized appreciation (depreciation) of investments as of May 31, 2007, as computed for federal income tax purposes, were as follows:

| | |
|-------------------------------|------------|
| Aggregate cost | \$ 892,469 |
| | ===== |
| Gross unrealized appreciation | \$ 50,603 |
| Gross unrealized depreciation | (2,485) |
| | ----- |
| Net unrealized appreciation | \$ 48,118 |
| | ===== |

- (a) Prerefunded.
- (b) FNMA Collateralized.
- (c) MBIA Insured.
- (d) FNMA/GNMA Collateralized.
- (e) Escrowed to maturity.
- (f) FGIC Insured.
- (g) Radian Insured.
- (h) AMBAC Insured.
- (i) FSA Insured.
- (j) FHA Insured.
- (k) FHLMC Collateralized.
- (l) Security may have a maturity of more than one year at time of issuance, but has variable rate and demand features that qualify it as a short-term security. The rate disclosed is that currently in effect. This rate changes periodically based upon prevailing market rates.
- (m) The rate disclosed is that currently in effect. This rate changes periodically and inversely based upon prevailing market rates.
- (n) XL Capital Insured.
- (o) GNMA Collateralized.

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BlackRock MuniVest Fund, Inc.

Schedule of Investments as of May 31, 2007 (Unaudited)

(in Thousands)

- (p) Investments in companies considered to be an affiliate of the Fund, for purposes of Section 2(a)(3) of the Investment Company Act of 1940, were as follows:

| Affiliate | Net Activity | Dividend Income |
|--|-----------------|--------------------|
| Merrill Lynch Institutional Tax-Exempt Fund | 8,278 | \$259 |

- (q) Represents the current yield as of May 31, 2007.
- (r) Securities represent underlying bonds transferred to a separate securitization trust established in a tender option bond transaction in which the Fund may have acquired the residual interest certificates. These securities serve as collateral in a financing transaction.
- o Forward interest rate swaps outstanding as of May 31, 2007 were as follows:

| | Notional Amount | Unrealized Appreciation |
|--|--------------------|----------------------------|
| Pay a fixed rate of 3.595% and receive a floating rate based on 1-Week Bond Market Association Rate | | |
| Broker, JPMorgan Chase Expires June 2017 | \$ 17,250 | \$ 307 |
| Pay a fixed rate of 3.7575% and receive a floating rate based on 1-Week Bond Market Association Rate | | |
| Broker, JPMorgan Chase Expires July 2017 | \$ 25,000 | 141 |
| Pay a fixed rate of 3.769% and receive a floating rate based on 1-Week Bond Market Association Rate | | |
| Broker, Goldman Sachs, Inc. Expires August 2017 | \$ 18,000 | 92 |
| Pay a fixed rate of 3.662% and receive a floating rate based on 1-Week Bond Market Association Rate | | |
| Broker, JPMorgan Chase Expires August 2017 | \$ 25,000 | 331 |
| Total | | \$ 871 ===== |

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- 2(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.
- 2(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 quarter 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 3 - Exhibits

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.

BlackRock MuniVest Fund, Inc.

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

Robert C. Doll, Jr.
Chief Executive Officer
BlackRock MuniVest Fund, Inc.

Date: July 24, 2007

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.
Chief Executive Officer
BlackRock MuniVest Fund, Inc.

Date: July 24, 2007

By: /s/ Donald C. Burke

Donald C. Burke
Chief Financial Officer
BlackRock MuniVest Fund, Inc.

Date: July 24, 2007