

Summary Prospectus

BlackRock Municipal Bond Fund, Inc. | Class K Shares

- **BlackRock High Yield Municipal Fund**

Class K: MKYHX

Before you invest, you may want to review the Fund's prospectus, which contains more information about the Fund and its risks. You can find the Fund's prospectus (including amendments and supplements), reports to shareholders and other information about the Fund, including the Fund's statement of additional information, online at <http://www.blackrock.com/prospectus>. You can also get this information at no cost by calling (800) 537-4942 or by sending an e-mail request to prospectus.request@blackrock.com, or from your financial professional. The Fund's prospectus and statement of additional information, both dated November 1, 2023, as amended and supplemented from time to time, are incorporated by reference into (legally made a part of) this Summary Prospectus.

This Summary Prospectus contains information you should know before investing, including information about risks. Please read it before you invest and keep it for future reference.

The Securities and Exchange Commission has not approved or disapproved these securities or passed upon the adequacy of this Summary Prospectus. Any representation to the contrary is a criminal offense.

Not FDIC Insured • May Lose Value • No Bank Guarantee

Summary Prospectus

Key Facts About BlackRock High Yield Municipal Fund

Investment Objective

The investment objective of BlackRock High Yield Municipal Fund (the “High Yield Fund” or the “Fund”) is to provide shareholders with as high a level of income exempt from Federal income taxes as is consistent with the investment policies of the Fund.

Fees and Expenses of the Fund

This table describes the fees and expenses that you may pay if you buy, hold and sell Class K Shares of the Fund. **You may pay other fees, such as brokerage commissions and other fees to your financial professional or your selected securities dealer, broker, investment adviser, service provider or industry professional (including BlackRock Advisors, LLC (“BlackRock”) and its affiliates) (each a “Financial Intermediary”), which are not reflected in the table and example below.**

Annual Fund Operating Expenses (expenses that you pay each year as a percentage of the value of your investment)	Class K Shares
Management Fee ¹	0.46%
Distribution and/or Service (12b-1) Fees	None
Other Expenses	0.19%
Miscellaneous Other Expenses	0.08%
Interest Expense	0.11%
Acquired Fund Fees and Expenses ²	0.01%
Total Annual Fund Operating Expenses²	0.66%
Fee Waivers and/or Expense Reimbursements ^{1,3}	(0.05)%
Total Annual Fund Operating Expenses After Fee Waivers and/or Expense Reimbursements^{1,3}	0.61%

¹ As described in the “Management of the Funds” section of the Fund’s prospectus beginning on page 43, BlackRock has contractually agreed to waive the management fee with respect to any portion of the Fund’s assets estimated to be attributable to investments in other equity and fixed-income mutual funds and exchange-traded funds managed by BlackRock or its affiliates that have a contractual management fee, through June 30, 2025. In addition, BlackRock has contractually agreed to waive its management fees by the amount of investment advisory fees the Fund pays to BlackRock indirectly through its investment in money market funds managed by BlackRock or its affiliates, through June 30, 2025. The contractual agreements may be terminated upon 90 days’ notice by a majority of the non-interested directors of BlackRock Municipal Bond Fund, Inc. (the “Corporation”) or by a vote of a majority of the outstanding voting securities of the Fund.

² The Total Annual Fund Operating Expenses do not correlate to the ratios of expenses to average net assets given in the Fund’s most recent annual report, which do not include Acquired Fund Fees and Expenses.

³ As described in the “Management of the Funds” section of the Fund’s prospectus beginning on page 43, BlackRock has contractually agreed to waive and/or reimburse fees or expenses in order to limit Total Annual Fund Operating Expenses After Fee Waivers and/or Expense Reimbursements (excluding Dividend Expense, Interest Expense, Acquired Fund Fees and Expenses and certain other Fund expenses) to 0.49% of average daily net assets through June 30, 2025. The contractual agreement may be terminated upon 90 days’ notice by a majority of the non-interested directors of the Corporation or by a vote of a majority of the outstanding voting securities of the Fund.

Example:

This Example is intended to help you compare the cost of investing in the Fund with the cost of investing in other mutual funds. The Example assumes that you invest \$10,000 in the Fund for the time periods indicated and then redeem all of your shares at the end of those periods. The Example also assumes that your investment has a 5% return each year and that the Fund’s operating expenses remain the same. Although your actual costs may be higher or lower, based on these assumptions your costs would be:

	1 Year	3 Years	5 Years	10 Years
Class K Shares	\$62	\$206	\$363	\$818

Portfolio Turnover:

The Fund pays transaction costs, such as commissions, when it buys and sells securities (or “turns over” its portfolio). A higher portfolio turnover rate may indicate higher transaction costs and may result in higher taxes when shares are held in a taxable account. These costs, which are not reflected in annual fund operating expenses or in the

Example, affect the Fund's performance. During the most recent fiscal year, the Fund's portfolio turnover rate was 36% of the average value of its portfolio.

Principal Investment Strategies of the Fund

Under normal circumstances, the High Yield Fund seeks to achieve its objective by investing at least 80% of its assets in municipal bonds. Municipal bonds include debt obligations issued by or on behalf of a governmental entity or other qualifying issuer that pay interest that is, in the opinion of bond counsel to the issuer, generally excludable from gross income for Federal income tax purposes (except that the interest may be includable in taxable income for purposes of the Federal alternative minimum tax). Municipal bonds may be obligations of a variety of issuers, including governmental entities or other qualifying issuers. Issuers may be states, territories and possessions of the United States and the District of Columbia and their political subdivisions, agencies and instrumentalities. Municipal bonds also include short-term tax-exempt obligations like municipal notes and variable rate demand obligations.

The High Yield Fund may invest in municipal bonds rated in any rating category or in unrated municipal bonds. Although the Fund may invest in municipal bonds in any rating category, Fund management presently intends to invest at least 65% of the Fund's net assets in medium- to low-quality bonds as rated by at least one independent rating agency (BBB or lower by S&P Global Ratings ("S&P") or Fitch Ratings, Inc. ("Fitch") or Baa or lower by Moody's Investors Service, Inc. ("Moody's")), or if unrated, judged to be of comparable quality by BlackRock. Obligations rated below BBB or Baa are commonly known as "junk bonds." It is possible that the Fund could invest up to 100% of its assets in "junk bonds."

The Fund may also invest up to 10% of its assets in municipal bonds that are distressed securities. Distressed securities are securities that are the subject of bankruptcy proceedings or otherwise in default as to the repayment of principal and/or payment of interest at the time of acquisition or are rated in the lowest rating categories by at least one independent rating agency (CC or lower by S&P or Fitch or Ca or lower by Moody's), or if unrated, judged to be of comparable quality by BlackRock. The Fund will primarily invest in municipal bonds that have a maturity of five years or longer.

Principal Risks of Investing in the Fund

Risk is inherent in all investing. The value of your investment in the Fund, as well as the amount of return you receive on your investment, may fluctuate significantly from day to day and over time. You may lose part or all of your investment in the Fund or your investment may not perform as well as other similar investments. The following is a summary description of principal risks of investing in the Fund. The relative significance of each risk factor below may change over time and you should review each risk factor carefully.

■ ***Debt Securities Risk*** — Debt securities, such as bonds, involve interest rate risk, credit risk, extension risk, and prepayment risk, among other things.

Interest Rate Risk — The market value of bonds and other fixed-income securities changes in response to interest rate changes and other factors. Interest rate risk is the risk that prices of bonds and other fixed-income securities will increase as interest rates fall and decrease as interest rates rise.

The Fund may be subject to a greater risk of rising interest rates due to the recent period of historically low interest rates. For example, if interest rates increase by 1%, assuming a current portfolio duration of ten years, and all other factors being equal, the value of the Fund's investments would be expected to decrease by 10%. (Duration is a measure of the price sensitivity of a debt security or portfolio of debt securities to relative changes in interest rates.) The magnitude of these fluctuations in the market price of bonds and other fixed-income securities is generally greater for those securities with longer maturities. Fluctuations in the market price of the Fund's investments will not affect interest income derived from instruments already owned by the Fund, but will be reflected in the Fund's net asset value. The Fund may lose money if short-term or long-term interest rates rise sharply in a manner not anticipated by Fund management.

To the extent the Fund invests in debt securities that may be prepaid at the option of the obligor (such as mortgage-backed securities), the sensitivity of such securities to changes in interest rates may increase (to the detriment of the Fund) when interest rates rise. Moreover, because rates on certain floating rate debt securities typically reset only periodically, changes in prevailing interest rates (and particularly sudden and significant changes) can be expected to cause some fluctuations in the net asset value of the Fund to the extent that it invests in floating rate debt securities.

These basic principles of bond prices also apply to U.S. Government securities. A security backed by the "full faith and credit" of the U.S. Government is guaranteed only as to its stated interest rate and face value at maturity, not

its current market price. Just like other fixed-income securities, government-guaranteed securities will fluctuate in value when interest rates change.

A general rise in interest rates has the potential to cause investors to move out of fixed-income securities on a large scale, which may increase redemptions from funds that hold large amounts of fixed-income securities. Heavy redemptions could cause the Fund to sell assets at inopportune times or at a loss or depressed value and could hurt the Fund's performance.

Credit Risk — Credit risk refers to the possibility that the issuer of a debt security (i.e., the borrower) will not be able to make payments of interest and principal when due. Changes in an issuer's credit rating or the market's perception of an issuer's creditworthiness may also affect the value of the Fund's investment in that issuer. The degree of credit risk depends on both the financial condition of the issuer and the terms of the obligation.

Extension Risk — When interest rates rise, certain obligations will be paid off by the obligor more slowly than anticipated, causing the value of these obligations to fall.

Prepayment Risk — When interest rates fall, certain obligations will be paid off by the obligor more quickly than originally anticipated, and the Fund may have to invest the proceeds in securities with lower yields.

- **Municipal Securities Risks** — Municipal securities risks include the ability of the issuer to repay the obligation, the relative lack of information about certain issuers of municipal securities, and the possibility of future legislative changes which could affect the market for and value of municipal securities. Budgetary constraints of local, state, and federal governments upon which the issuers may be relying for funding may also impact municipal securities. These risks include:

General Obligation Bonds Risks — Timely payments depend on the issuer's credit quality, ability to raise tax revenues and ability to maintain an adequate tax base.

Revenue Bonds Risks — These payments depend on the money earned by the particular facility or class of facilities, or the amount of revenues derived from another source.

Private Activity Bonds Risks — Municipalities and other public authorities issue private activity bonds to finance development of industrial facilities for use by a private enterprise. The private enterprise pays the principal and interest on the bond, and the issuer does not pledge its full faith, credit and taxing power for repayment.

Moral Obligation Bonds Risks — Moral obligation bonds are generally issued by special purpose public authorities of a state or municipality. If the issuer is unable to meet its obligations, repayment of these bonds becomes a moral commitment, but not a legal obligation, of the state or municipality.

Municipal Notes Risks — Municipal notes are shorter term municipal debt obligations. If there is a shortfall in the anticipated proceeds, the notes may not be fully repaid and the Fund may lose money.

Municipal Lease Obligations Risks — In a municipal lease obligation, the issuer agrees to make payments when due on the lease obligation. Although the issuer does not pledge its unlimited taxing power for payment of the lease obligation, the lease obligation is secured by the leased property.

Tax-Exempt Status Risk — The Fund and its investment manager will rely on the opinion of issuers' bond counsel and, in the case of derivative securities, sponsors' counsel, on the tax-exempt status of interest on municipal bonds and payments under derivative securities. Neither the Fund nor its investment manager will independently review the bases for those tax opinions, which may ultimately be determined to be incorrect and subject the Fund and its shareholders to substantial tax liabilities.

- **Junk Bonds Risk** — Although junk bonds generally pay higher rates of interest than investment grade bonds, junk bonds are high risk investments that are considered speculative and may cause income and principal losses for the Fund.
- **Distressed Securities Risk** — Distressed securities are speculative and involve substantial risks in addition to the risks of investing in junk bonds. The Fund will generally not receive interest payments on the distressed securities and may incur costs to protect its investment. In addition, distressed securities involve the substantial risk that principal will not be repaid. These securities may present a substantial risk of default or may be in default at the time of investment. The Fund may incur additional expenses to the extent it is required to seek recovery upon a default in the payment of principal or interest on its portfolio holdings. In any reorganization or liquidation proceeding relating to a portfolio company, the Fund may lose its entire investment or may be required to accept cash or securities with a value less than its original investment. Distressed securities and any securities received in an exchange for such securities may be subject to restrictions on resale.
- **Illiquid Investments Risk** — The Fund may not acquire any illiquid investment if, immediately after the acquisition, the Fund would have invested more than 15% of its net assets in illiquid investments. An illiquid investment is any investment that the Fund reasonably expects cannot be sold or disposed of in current market conditions in seven

calendar days or less without the sale or disposition significantly changing the market value of the investment. Liquid investments may become illiquid after purchase by the Fund, particularly during periods of market turmoil. There can be no assurance that a security or instrument that is deemed to be liquid when purchased will continue to be liquid for as long as it is held by the Fund, and any security or instrument held by the Fund may be deemed an illiquid investment pursuant to the Fund's liquidity risk management program. The Fund's illiquid investments may reduce the returns of the Fund because it may be difficult to sell the illiquid investments at an advantageous time or price. In addition, if the Fund is limited in its ability to sell illiquid investments during periods when shareholders are redeeming their shares, the Fund will need to sell liquid securities to meet redemption requests and illiquid securities will become a larger portion of the Fund's holdings. An investment may be illiquid due to, among other things, the reduced number and capacity of traditional market participants to make a market in fixed-income securities or the lack of an active trading market. To the extent that the Fund's principal investment strategies involve derivatives or securities with substantial market and/or credit risk, the Fund will tend to have the greatest exposure to the risks associated with illiquid investments. Illiquid investments may be harder to value, especially in changing markets, and if the Fund is forced to sell these investments to meet redemption requests or for other cash needs, the Fund may suffer a loss. This may be magnified in a rising interest rate environment or other circumstances where investor redemptions from fixed-income mutual funds may be higher than normal. In addition, when there is illiquidity in the market for certain securities, the Fund, due to limitations on illiquid investments, may be subject to purchase and sale restrictions.

■ **Leverage Risk** — Some transactions may give rise to a form of economic leverage. These transactions may include, among others, derivatives, and may expose the Fund to greater risk and increase its costs. The use of leverage may cause the Fund to liquidate portfolio positions when it may not be advantageous to do so to satisfy its obligations or to meet the applicable requirements of the Investment Company Act of 1940, as amended (the "Investment Company Act"), and the rules thereunder. Increases and decreases in the value of the Fund's portfolio will be magnified when the Fund uses leverage.

■ **Market Risk and Selection Risk** — Market risk is the risk that one or more markets in which the Fund invests will go down in value, including the possibility that the markets will go down sharply and unpredictably. The value of a security or other asset may decline due to changes in general market conditions, economic trends or events that are not specifically related to the issuer of the security or other asset, or factors that affect a particular issuer or issuers, exchange, country, group of countries, region, market, industry, group of industries, sector or asset class. Local, regional or global events such as war, acts of terrorism, the spread of infectious illness or other public health issues like pandemics or epidemics, recessions, or other events could have a significant impact on the Fund and its investments. Selection risk is the risk that the securities selected by Fund management will underperform the markets, the relevant indices or the securities selected by other funds with similar investment objectives and investment strategies. This means you may lose money.

An outbreak of an infectious coronavirus (COVID-19) that was first detected in December 2019 developed into a global pandemic that has resulted in numerous disruptions in the market and has had significant economic impact leaving general concern and uncertainty. Although vaccines have been developed and approved for use by various governments, the duration of the pandemic and its effects cannot be predicted with certainty. The impact of this coronavirus, and other epidemics and pandemics that may arise in the future, could affect the economies of many nations, individual companies and the market in general ways that cannot necessarily be foreseen at the present time.

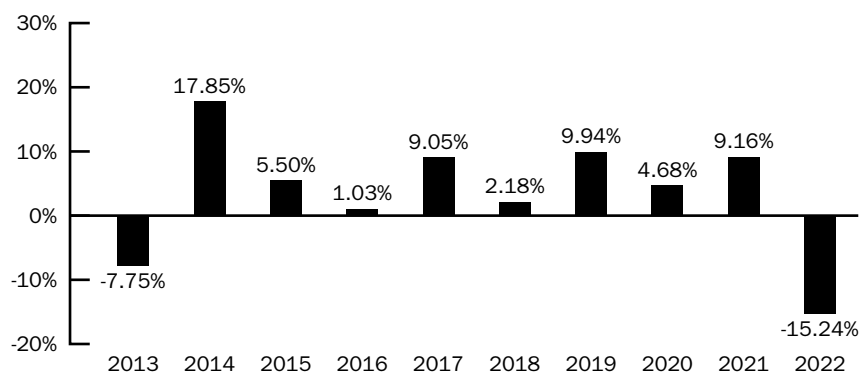
■ **Variable Rate Demand Obligations Risks** — Variable rate demand obligations are floating rate securities that combine an interest in a long-term municipal bond with a right to demand payment before maturity from a bank or other financial institution. If the bank or financial institution is unable to pay, the Fund may lose money.

Performance Information

The information shows you how the Fund's performance has varied year by year and provides some indication of the risks of investing in the Fund. The table compares the Fund's performance to that of the Bloomberg Municipal High Yield Bond Index and a customized weighted index comprised of 20% Bloomberg Municipal Bond Rated Baa Index / 60% Bloomberg Municipal Bond: High Yield (non-Investment Grade) Total Return Index / 20% Bloomberg Municipal Investment Grade ex BBB (the "High Yield Customized Reference Benchmark"). The performance information for periods prior to January 25, 2018, the commencement of operations of Class K Shares, shows the performance of the Fund's Institutional Shares. The performance of the Fund's Class K Shares would be substantially similar to Institutional Shares because Class K Shares and Institutional Shares invest in the same portfolio of securities and performance would only differ to the extent that Class K Shares and Institutional Shares have different expenses. The actual returns of Class K Shares would have been higher than those of the Institutional Shares because Class K Shares have lower expenses than the Institutional Shares. To the extent that dividends and distributions have been

paid by the Fund, the performance information for the Fund in the chart and table assumes reinvestment of the dividends and distributions. As with all such investments, past performance (before and after taxes) is not an indication of future results. The table includes all applicable fees. If the Fund's investment manager and its affiliates had not waived or reimbursed certain Fund expenses during these periods, the Fund's returns would have been lower. Updated information on the Fund's performance, including its current net asset value, can be obtained by visiting <http://www.blackrock.com> or can be obtained by phone at (800) 882-0052.

Class K Shares
ANNUAL TOTAL RETURNS
BlackRock High Yield Municipal Fund
As of 12/31



During the ten-year period shown in the bar chart, the highest return for a quarter was 6.69% (quarter ended March 31, 2014) and the lowest return for a quarter was -7.97% (quarter ended March 31, 2022). The year-to-date return as of September 30, 2023 was -3.17%.

For the periods ended 12/31/22
Average Annual Total Returns

	1 Year	5 Years	10 Years
BlackRock High Yield Municipal Fund — Class K Shares			
Return Before Taxes	(15.24)%	1.70%	3.24%
Return After Taxes on Distributions	(15.28)%	1.68%	3.22%
Return After Taxes on Distributions and Sale of Fund Shares	(7.72)%	2.22%	3.46%
Bloomberg Municipal High Yield Bond Index (Reflects no deduction for fees, expenses or taxes)	(13.10)%	2.63%	3.49%
High Yield Customized Reference Benchmark (Reflects no deduction for fees, expenses or taxes)	(11.85)%	2.17%	— ¹

¹ The High Yield Customized Reference Benchmark commenced in September 2016 and therefore the High Yield Customized Reference Benchmark does not have 10-year returns.

After-tax returns are calculated using the historical highest individual federal marginal income tax rates and do not reflect the impact of state and local taxes. Actual after-tax returns depend on the investor's tax situation and may differ from those shown, and the after-tax returns shown are not relevant to investors who hold their shares through tax-deferred arrangements, such as 401(k) plans or individual retirement accounts.

Investment Manager

The Fund's investment manager is BlackRock Advisors, LLC (previously defined as "BlackRock").

Portfolio Managers

Name	Portfolio Manager of the Fund Since	Title
Walter O'Connor, CFA	2006	Managing Director of BlackRock, Inc.
Phillip Soccio, CFA	2022	Director of BlackRock, Inc.
Kevin Maloney, CFA	2022	Director of BlackRock, Inc.
Ryan McDonald, CFA	2023	Managing Director of BlackRock, Inc.

Purchase and Sale of Fund Shares

Class K Shares of the Fund are available only to (i) certain employee benefit plans, such as health savings accounts, and certain employer-sponsored retirement plans (not including SEP IRAs, SIMPLE IRAs and SARSEPs) (collectively, “Employer-Sponsored Retirement Plans”), (ii) collective trust funds, investment companies and other pooled investment vehicles, each of which may purchase shares of the Fund through a Financial Intermediary that has entered into an agreement with the Fund’s distributor to purchase such shares, (iii) “Institutional Investors,” which include, but are not limited to, endowments, foundations, family offices, banks and bank trusts, local, city, and state governmental institutions, corporations and insurance company separate accounts, each of which may purchase shares of the Fund through a Financial Intermediary that has entered into an agreement with the Fund’s distributor to purchase such shares, (iv) clients of private banks that purchase shares of the Fund through a Financial Intermediary that has entered into an agreement with the Fund’s distributor to sell such shares, (v) fee-based advisory platforms of a Financial Intermediary that (a) has specifically acknowledged in a written agreement with the Fund’s distributor and/or its affiliate(s) that the Financial Intermediary shall offer such shares to fee-based advisory clients through an omnibus account held at the Fund or (b) transacts in the Fund’s shares through another intermediary that has executed such an agreement and (vi) any other investors who met the eligibility criteria for BlackRock Shares or Class K Shares prior to August 15, 2016 and have continually held Class K Shares of the Fund in the same account since August 15, 2016.

You may purchase or redeem shares of the Fund each day the New York Stock Exchange is open. Purchase orders may also be placed by calling (800) 537-4942, by mail (c/o BlackRock Funds, P.O. Box 534429, Pittsburgh, Pennsylvania 15253-4429), or online at www.blackrock.com. Institutional Investors are subject to a \$5 million minimum initial investment requirement. Other investors, including Employer-Sponsored Retirement Plans, have no minimum initial investment requirement. There is no minimum investment amount for additional purchases.

Tax Information

Different income tax rules apply depending on whether you are invested through a qualified tax-exempt plan described in section 401(a) of the Internal Revenue Code of 1986, as amended. If you are invested through such a plan (and Fund shares are not “debt-financed property” to the plan), then the dividends paid by the Fund and the gain realized from a redemption or exchange of Fund shares will generally not be subject to U.S. federal income taxes until you withdraw or receive distributions from the plan. If you are not invested through such a plan, then the Fund’s dividends and gain from a redemption or exchange may be subject to U.S. federal income taxes and may be taxed as ordinary income or capital gains, unless you are a tax-exempt investor. The Fund intends to make distributions most of which will be excludable from gross income for federal income tax purposes.

Payments to Broker/Dealers and Other Financial Intermediaries

If you purchase shares of the Fund through a Financial Intermediary, the Fund and BlackRock Investments, LLC, the Fund’s distributor, or its affiliates may pay the Financial Intermediary for the sale of Fund shares and related services. These payments may create a conflict of interest by influencing the Financial Intermediary and your individual financial professional to recommend the Fund over another investment.

Class K Shares are only available through a Financial Intermediary if the Financial Intermediary will not receive from Fund assets, or the Fund’s distributor’s or an affiliate’s resources, any commission payments, shareholder servicing fees (including sub-transfer agent and networking fees), or distribution fees (including Rule 12b-1 fees) with respect to assets invested in Class K Shares.

Ask your individual financial professional or visit your Financial Intermediary’s website for more information.

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