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## METRO WASTEWATER RECLAMATION DISTRICT

Agency Name	Metro Wastewater Reclamation District
Service Provided	Wholesale wastewater transmission and treatment for 55 local governments in the Denver metropolitan area. These local governments—both cities and sanitation districts—then provide retail wastewater services to approximately 1.5 million people in metro Denver.
Area Served	The service area encompasses about 380 square miles, including all of Denver and parts of Adams, Arapahoe and Jefferson Counties. Arvada, Aurora, Lakewood, Thornton, and part of Westminster are included, together with numerous small municipalities, sanitation, and water and sanitation districts.
Type of Agency	Regional wastewater treatment agency (special district) formed under Colorado law in 1961.
Budget	The operating budget for 2003 is \$40.6 million. The Metro District's Annual Charges (wastewater treatment charges plus debt service cost) are \$55.9 million.
Cost of Service	The cost of transmission and treatment service is based upon the amount (flow) and strength (loadings) of the wastewater each connector (customer government) puts into the Metro District system.
Amount of Water Treated	About 160 million gallons a day.
Discharge Point, Plant Location, and Capacity	The Metro District's treatment plant is beside the South Platte River north of Denver at approximately 64th and York Streets. It discharges treated water into the South Platte River. Its 185-million-gallon-a-day capacity makes it the largest wastewater treatment plant between the Mississippi River and the West Coast.
Level of Treatment	Advanced treatment (nitrification-denitrification) for about half the water treated and secondary treatment for the remaining water.
Discharge Regulation	The Metro District's effluent is regulated under the Colorado Discharge Permit System (Colorado Department of Public Health and Environment) and the National Pollutant Discharge Elimination System (U.S. EPA).
Major Awards	The Metro District was EPA Region 8's top Operations and Maintenance Award winner for Large, Advanced Plants in 1997 and placed second nationally in the same category. Metro also won first place nationally in EPA's Pretreatment Awards competition in 2000 and 1996 for pretreatment programs handling 26-100 regulated

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entities.

Biosolids Fertilizer	About 80 dry tons a day of high quality, anaerobically digested biosolids are produced under the METROGRO™ Natural Soil Conditioner and Fertilizer trade name. All of the Metro District's biosolids are beneficially recycled. About 2 percent are mixed with wood chips and cured to form METROGRO™ Natural Soil Conditioner and Fertilizer compost, which can be used on home lawns and gardens. The remaining biosolids "cake" is spread on farmland as a natural soil conditioner/fertilizer that is about 83 percent water. The Metro District owns about 50,000 acres of farmland 60 miles east of Denver near Deer Trail, CO. About 60 percent of the District's biosolids are applied to its METROGRO Farm land, and about 38 percent goes to private farmers. The District's biosolids contain minute amounts of heavy metals that are tightly regulated by the state and the U.S. EPA. These amounts are far less than the EPA's metals criteria for classifying the biosolids as "Exceptional Quality" and are not dangerous.
Biosolids Regulation	Biosolids production and use are regulated by both the federal government under 40 CFR Parts 501 and 503 and the state of Colorado under 5 CCR 1002-64 (Colorado Regulation 64).
Original Name	Metropolitan Denver Sewage Disposal District No. 1.
Brief History	Construction on the Central Treatment Plant and 50 miles of interceptor sewer lines began in 1964 after voters approved a \$32.5 million bond issue to fund the projects. The north complex of the existing plant began operating in 1966. Land application of stabilized wastewater solids began in 1969. The south complex of the plant began operation in 1976. The Metro District began chlorinating effluent in 1966, biosolids composting in 1986, and dechlorination in 1988. Nitrification and denitrification (a process to remove ammonia and nitrates) began in 1990, the same year the name was changed to Metro Wastewater Reclamation District. Before the Metro District's facilities were built, only primary treatment was being done in the metro Denver area.
Industrial Wastes	Under the Clean Water Act, the Metro District requires businesses and organizations that produce prohibited industrial wastes to <u>pretreat</u> them before discharging them into the sewer system. Prohibited wastes include toxics and other pollutants that could harm the sewers or the wastewater treatment process, pollute the South Platte River, or contaminate the Metro District's biosolids.
Interceptor Sewers	The Metro District collects wastewater from neighborhood sewer lines and delivers it to the Metro District's Central Treatment Plant via approximately 250 miles of interceptor sewers. Most of the wastewater the Metro District treats flows to the plant by gravity, although pumps are needed in some areas—primarily areas north of the central plant. The Metro District's (and metro Denver's) sewers handle household and office wastewater but not surface

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water runoff such as stormwater.

Primary Treatment	Primary treatment removes pollutants from wastewater through screening, skimming, and settling, mimicking a natural process that's over four billion years old. About 10-12 hours are needed to treat wastewater from the time it enters the plant until it is discharged into the South Platte River.
Secondary Treatment	Secondary treatment continues nature's treatment process by using microorganisms to remove suspended and dissolved organic matter. After the microorganisms have "eaten" the waste, they clump together and settle to the bottom in a secondary clarifier. Chlorine is then mixed with the water that flows out of the secondary clarifiers to kill harmful microorganisms, called pathogens. Before this water is discharged into the River, it is dechlorinated by mixing sulfur dioxide with it.
Nitrification-Denitrification	In 1990, the Metro District began advanced treatment to remove ammonia from about half its effluent before discharging it into the River. By removing ammonia in the plant, more dissolved oxygen is made available in the River, making it better able to support aquatic life. This process, called nitrification-denitrification, uses special bacteria to convert ammonia to nitrates, which are further converted during denitrification to harmless nitrogen and released into the atmosphere as a gas.
Biosolids Treatment	The Metro District removes and concentrates solids from the secondary treatment process and blends them with solids from primary treatment. This mixture is then sent to anaerobic digesters where it is stabilized in a biological decomposition process using microorganisms in an oxygen-free environment. The stabilized solids now called <i>biosolids</i> can then be used as organic fertilizer and soil conditioner. Following anaerobic digestion and thickening, the biosolids are further dewatered using large centrifuges into a semi-solid "cake" and applied to the soil's surface. About 98 percent of the Metro District's biosolids are applied to agricultural land in cake form. Biosolids cake is also used to make compost, a peat moss-like soil conditioner. Both products are marketed under the METROGRO™ biosolids natural soil conditioner and fertilizer trade name.
Cogeneration	The oxygen-free (anaerobic) digestion process also produces methane. The Metro District uses this gas to fuel four large engines that drive electrical generators. This process, called cogeneration, produces electricity and heat. The electricity is used in the plant to reduce the electricity cost. The heat is used to heat the 10 anaerobic digesters and other plant buildings.
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