

# Community and Utility Profile



Little Rock  
Wastewater

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## Service Area Profile



### Geography, History & Climate

**The City of Little Rock** is located near the geographic center of Arkansas. Little Rock derives its name from a small rock formation on the south bank of the Arkansas River called *la Petite Roche* ("the little rock"). The "little rock" was used by early river traffic as a landmark and became a well-known river crossing.

The city has a total area of 116.8 square miles and is located on the south bank of the Arkansas River in Central Arkansas. Fourche Creek and Rock Creek run through the city and flow into the river.



Little Rock is near the Ouachita Mountain range, Pinnacle Mountain State Park, and several fine lakes and streams. Outdoor recreational options are almost unlimited and include hiking, camping, boating, hunting, fishing, golf, tennis, swimming, and soccer.

Little Rock has a moderate climate with four separate seasons. Spring and autumn are warm and pleasant seasons in Little Rock. The summer months in

Little Rock, from June to September, feature typically hot, sunny weather, with cooler evenings. Temperatures in Little Rock peaks at around 34°C / 93°F during July and August each summer. Wet weather in the Little Rock area is spread throughout the year, although more rain falls during the spring season. The average annual precipitation rainfall in Little Rock is around 50 inches / 127 cm.

### **Demographics and Socioeconomic**

Little Rock is the capital and the largest city of Arkansas. The Metropolitan Statistical Area (MSA) had a population of 699,757 people in the 2010 census. The MSA is in turn included in the Little Rock–North Little Rock–Pine Bluff, Arkansas Combined Statistical Area, which had a population of 877,091 in the 2010 census, making it the 47th largest combined statistical area in America. As of the 2010 US Census, Little Rock had a population of 193,524, making it the 118th largest city in America. It is the county seat of Pulaski County.

Centrally located, Little Rock is where the Southeast meets the Southwest, and the delta becomes the mountains. The city is 286 feet above sea level, with residential areas ranging from 300 to 630 feet. The City of Little Rock is 116.8 square miles, while North Little Rock is 49.3. Pulaski County covers 781 square miles. Distances by highway to major nearby cities, include: Dallas – 307 miles; Houston – 443 miles; Oklahoma City – 348 miles; Tulsa – 288 miles; Kansas City – 405 miles; St. Louis - 360 miles; Louisville – 522 miles; Nashville – 360 miles; Atlanta – 523 miles; Memphis – 139 miles; and New Orleans – 437 miles.

As the largest city in a primarily rural and agricultural state, Little Rock is the center of economic activity in Arkansas. During the economic downturn experienced in 2008 and 2009, the City benefitted from the economic stability provided by its higher than average employment share in two comparatively stable economic sectors: government and health care. The presence of these industries helps to explain the region's lower than average unemployment of approximately 6%. Local, state, and federal government have been Little Rock's major employers for many years. Medical facilities, banks, retail, technology, manufacturing, and other service industries are among the major industries in Little Rock.

New businesses and housing opportunities are bringing people back to the City's core to live, shop, work and play.



The William Jefferson Clinton Presidential Library and the headquarters for Heifer International are located in the River Market District.

The Arkansas River Trail is a nationally recognized recreational rail trail that is located on both the Little Rock and North Little Rock side of the Arkansas River. The trail is currently 17 miles long and is open for use by



hikers, joggers, and cyclist. When complete the trail will run for 24 miles.

Medical facilities in the Little Rock area provide efficient, comprehensive service to more than two million individuals throughout the state. The twenty major area hospitals provide bed space for over 5,000 patients. There are a large number of specialty clinics, including outpatient surgery centers that are continuing to expand.

Diverse and quality educational opportunities are available in Little Rock. The University of Arkansas for Medical Sciences continues to garner international attention for ground breaking medical research and procedures. The University's four colleges and the Graduate School service more than 2,600 students. The University of Arkansas at Little Rock (UALR) is a metropolitan university servicing 12,000 students with a wide range of degree offerings, including the juris doctorate degree offered at the UALR Bowen School of Law. In addition, Little Rock is the home of Philander Smith College and Arkansas Baptist College, two historically black colleges that are leading exciting revitalization initiatives in the surrounding areas.

### **Incentive Programs—New and Existing Companies**

#### **Local programs**

The basic method of financing new and expanding industry in the region is through the use of Act 9 Industrial Revenue Bonds issued at the municipal and county levels. Up to \$6 million of an Act 9 issue can be guaranteed under state insurance guarantee programs.

#### **State programs**

The Arkansas Science and Technology Authority, located in Little Rock, was established in 1983 to promote scientific research, technology development, and business innovation in the state. To this end, it provides financial support for the transfer and development of innovative technology to an enterprise based in Arkansas. The Authority currently offers three programs: the Applied Research Grant Program, the Seed Capital Investment Program, and the Technology Development Program.

The Small Business Loan Program was founded in 1999 to stimulate economic growth by providing up to 50 percent of a small business loan to qualified applicants. This financing, administered by the Arkansas Department of Economic Development, can be used as working capital, to purchase machinery and equipment, and to construct or renovate commercial real estate.

There are several special industrial location incentives offered by the State of Arkansas. Two of the major programs are the Arkansas Enterprise Zone Program and Arkansas Workers' Compensation, legislation passed in 1993 that makes workers' compensation

insurance more affordable for employers. The Chamber of Commerce has information about the many other incentives offered by the state of Arkansas, which include corporate income tax credits, sales and use tax refunds, and the payment in lieu of taxes program.

## UALR



Little Rock is home to the University of Arkansas at Little Rock (UALR). The University of Arkansas at Little Rock was founded in 1927 as Little Rock Junior College under the supervision of the city Board of Education. That first semester there were eight instructors and about 100 students. By 1929 the college was accredited by the North Central Association of Colleges and Schools, a status it has kept through changes in size and status.

Housed at first in public school buildings, the college moved in 1949 to its present location in southwest Little Rock on a beautifully wooded site donated by Raymond Rebsamen, a Little Rock businessman. The college was also by that time the sole beneficiary of a continuing trust established by former Governor George W. Donaghey.

In 1957, the institution began a four-year degree program, became independent and privately supported under a separate board of trustees, and took the name Little Rock University.

After several years of discussion and study, Little Rock University in September 1969 merged with the University of Arkansas to create the University of Arkansas at Little Rock. That was a major step in the creation of a multi-campus system that now includes eight campuses: University of Arkansas, Fayetteville; University of Arkansas for Medical Sciences; University of Arkansas at Little Rock; University of Arkansas at Pine Bluff; University of Arkansas at Monticello; Phillips Community College of the University of Arkansas; University of Arkansas Community College at Hope; and University of Arkansas Community College at Batesville. Within this structure, UALR is state supported, operationally separate, and specifically oriented toward serving the educational needs of Arkansas.

The University of Arkansas merger began a period of rapid growth, which saw UALR go from about 3,500 students and 75 full-time faculty members in 1969 to about 13,242 students and 500 full-time faculty members today. The University's expanded offerings now include more than 100 undergraduate majors, an extensive schedule of night, weekend, and off-campus classes, and a wide range of community educational

services. UALR began offering graduate and professional work in 1975, and the UALR Graduate School was created in 1977. UALR is the only institution in the state to have earned the Carnegie ranking as “Research/Doctoral University - Intensive.” Besides the juris doctor, UALR has three doctoral programs and 39 graduate and professional programs, as well as joint programs with other campuses of the University of Arkansas System. Presidents include R.C. Hall (1927-1930), John A. Larson (1930-1950), Granville Davis (1950-1954), E.Q. Brothers (acting president 1954-1956), and Carey V. Stabler (1956-1969).

## **UAMS**

The University of Arkansas for Medical Sciences (UAMS) is part of the University of Arkansas System. UAMS has 2,775 students in six academic units: the Colleges of



Medicine, Pharmacy, Nursing, Health Related Professions, and Public Health and the Graduate School. UAMS also has more than 733 resident physicians completing their training at UAMS or at one of the eight Area Health Education Centers around the state.

UAMS is one of the largest public employers in the state with about 10,552 employees, including nearly 1,352 physicians who provide medical care to patients at UAMS and its affiliates, Arkansas Children's Hospital and the VA Medical Center.

UAMS combines the patient care resources of a state-of-the art hospital and outpatient center with the Winthrop P. Rockefeller Cancer Institute, Harvey and Bernice Jones Eye Institute, Donald W. Reynolds Institute on Aging, Myeloma Institute for Research and Therapy, the Psychiatric Research Institute and Jackson T. Stephens Spine & Neurosciences Institute.

The outreach efforts of UAMS include eight Area Health Education Centers (AHECs) in Fayetteville, Pine Bluff, El Dorado, Texarkana, Fort Smith, Jonesboro, Batesville/Mountain Home and Helena, Ark.; networks of senior health centers and centers for young children with special health care needs; and interactive video education and medical consultation services to community hospitals around the state.

UAMS is the state's largest basic and applied research institution, with more than \$107 million in annual research funding, grants and contracts and internationally renowned programs in multiple myeloma, aging, cancer and other areas.

## **Awards and Recognitions**

### **GFOA Distinguished Budget Presentation Award**

The City of Little Rock has been awarded the Government Finance Officers Association (GFOA) Distinguished Budget Presentation Award for its 2011 Budget Document. This is the 17th year in a row that the City of Little Rock is recognized by the GFOA for its commitment to meet the highest principles of governmental budgeting. The GFOA is a nonprofit professional association serving nearly 17,400 government finance professionals throughout North America. The GFOA's Distinguished Budget Presentation Awards Program is the only national awards program in governmental budgeting.

### **Kiplinger's Best Places to Live for the Value - Conscious**

The City of Little Rock placed seventh on the list, which used factors such as population growth, unemployment rate, income growth and housing costs. Little Rock has a cost of living index of 94 while the national average is 100. It also had a 5.2 percent increase in household income from 2005 to 2009, according to the magazine. Household income grew 5.5 percent nationwide.

### **Exemplary Performance Award**

The City of Little Rock has been awarded the title of Exemplary Performance Award for Individual Self-Insurer in Arkansas by the state Workers' Compensation Commission. The award was presented to City of Little Rock by the Arkansas Workers' Compensation Commission at the Third Annual Spring Fling/State of Arkansas Workers' Compensation Educational Conference, hosted by the AWCC and Arkansas Self Insurer Association, held this year from April 9 to April 11, 2008 in Hot Springs.

The Exemplary Performance Award to City of Little Rock represents excellent claims handling by a self-insured employer. Each year, the Self-Insurance Division of the Commission monitors companies handling workers' compensation claims for employers, grading each company on the number of cases and the timeliness in reporting injuries and paying injured employees. The City of Little Rock's claim program is administered by Risk Management Resources at Little Rock, AR. The City of Little Rock enrolled in the Self-Insurance Program on July 1, 1986. The Company is public employer.

## ***Wastewater System Facilities***

The 1933 Arkansas General Assembly enacted Act 132, authorizing all cities and towns in the state to levy user charges against property owners “to construct, own, equip, operate, maintain, and improve” sewage collection and treatment systems. In June 1935, a full-fledged Sanitary Sewer Committee was named and the City of Little Rock Sanitary Sewer System was created. The now seven-member Little Rock Sanitary Sewer Committee (“LRSSC”) manages and controls the city’s sewer system. The LRSSC and LRW must seek approval of all sewer rate increases and long term financing through the City of Little Rock Board of Directors. The City of Little Rock Board of Directors appoints LRSSC members. The LRSSC in turn hires a Chief Executive Officer. The LRSSC meets on the third Wednesday of each month.

LRW provides wastewater service to its customers. For financial reporting purposes, LRW is considered a component unit of the City of Little Rock, Arkansas. The LRSSC operates and manages LRW with the City of Little Rock having the power to impose its will on LRW. LRW adopts an annual operating, capital, and debt service budget along with associated rates and fees for services; and also issues updates to its Rules and Regulations. LRW recovers the cost of providing wastewater services primarily through user charges and collects a 10.0% Franchise Fee for the City of Little Rock.

### **Adams Field Wastewater Treatment Facility**



The Adams Field Wastewater Treatment Facility has been in operation since 1961 and was Little Rock's first wastewater treatment plant. From 1961 – 1972, the plant was equipped with only primary treatment. Secondary treatment facilities were added in 1972 and the plant is now rated as 36 million gallons per day complete-mix activated

sludge plant, serving approximately 70% of the city of Little Rock.



The plant is a two-stage "secondary" treatment plant, designed to reduce the pollutant load by approximately 90%. A combination of physical and biological processes is utilized to reduce this pollutant load in wastewater. Wastewater from Little Rock enters the plant via three 60-inch diameter gravity sewer lines at an average depth of 30 feet below ground and requires the pumping or lifting of the sewage to the surface.

Wastewater is sampled, flow measured, and then screened to remove large particles, sand, and gravel (grit). The flow then passes through three parallel primary clarifiers where solid materials settle to the bottom or float to the top to be skimmed off. Each circular clarifier is 10 feet deep and 115 feet in diameter. Wastewater is then held in these basins for about two hours.

Following primary treatment, the flow enters the activated sludge secondary process. Each of the six rectangular activated sludge aeration tanks are 15 feet deep, 40 feet wide, and 160 feet long. A biological microorganism population, which utilizes the incoming dissolved organic material in the wastewater as food, is maintained in the tanks.

Following the aeration tanks, the wastewater passes through a final clarifier section to capture the biological organisms that settle in the final clarifiers. These biological organisms that settle are returned to the activated sludge aeration tanks. These circular clarifiers are 13 feet deep and 145 feet in diameter. The overflow then passes to the ultraviolet (UV) disinfection system to kill the bacteria remaining after treatment.

Treated wastewater, which meets or exceeds all State and Federal requirements, is transported to the Arkansas River through a six foot diameter pipeline and discharged, causing no adverse effect on the river or public health. Solids captured during the treatment process are re-circulated in the aeration tanks to maintain a viable microorganism population, while some solids are wasted from the plant process daily via pumping through a five mile, 12 inch force main to the Fourche Creek Treatment Facility for further processing.

## **Fourche Creek Wastewater Treatment Facility**



Fourche Creek Wastewater Treatment Facility (FCWTF) is a secondary treatment facility with a step-feed activated sludge process, rated to treat 16 million gallons per day. While required by the State of Arkansas to reduce pollutant loads by 85%, FCWTF consistently achieve 90 to 95% removal through a combination of physical and biological processes before discharging the treated water to the Arkansas River.

Physical treatment entails the removal of any inorganic materials from the waste stream through bar-type screens and the centripetal action of a grit removal vortex chamber. These screenings and grit particles are collected and disposed of through the local solids waste management landfill.

Biological treatment takes place under a process called activated sludge, which is comprised of three aeration tanks and three final clarification tanks. Water leaving the primary clarification process is introduced through up to four feed gates that are distributed along the activated process. Additionally, settled bacteriological growth, or return activated sludge, is introduced at the head of the aeration tanks to maintain the proper mixed liquor suspended solids concentrations. Optimizing the combination of incoming organic materials (food), the appropriate mixed liquor concentration (MLSS), and adequate aeration/mixing provided by the aeration blowers consolidates the natural biological degradation process.

Under the calm condition of the clarification tanks, the microbiological colonies, or floc, that formed under aeration, settle out and are collected. A portion of the separated sludge is pumped to the aeration tanks, while the remaining sludge is pumped to a thickener process. The clarified effluent flows over the final weirs and through a 72-inch diameter pipe to disinfection, then discharged into the Arkansas River.

Sludge from both wastewater treatment plants, FCWTF and Adams Field, are combined and thickened at this facility prior to being introduced to one of four 1.2 million gallon

primary anaerobic digestion tanks. Held for approximately 30 days at a constant 95 degrees Fahrenheit, and completely devoid of any free oxygen, these tanks use naturally occurring bacteria to consume 55% of the organic, or volatile, solids in the thickened sludge to produce water, carbon-dioxide, sulfide, and most importantly methane. The methane gas is collected and piped to the Generator Building where it is used as a fuel source. The remaining inorganic sludge is piped to the two secondary digesters for solids separation, and finally to storage lagoons for holding until summer, when it is mixed and hauled to area farmlands for soil conditioning. Approximately 6,000 tons by dry weight of the soil sediment material, or biosolids, is hauled and land applied each year.

The methane gas collected from the anerobic process is piped to two of the three 800 horsepower, 8 cylinder engines displacing 6,500 cubic inches and with each coupled to a 545 kW generator produces the plants 900 to 1000 kW electrical demand. Savings from this on-site alternative power generation can exceed \$300,000 each year. The heat given off by the engines oil, cooling jacket, and exhaust is recovered through heat exchangers, and used to heat the sludge in the anaerobic digesters. When all engine heat is transferred to the digesters, up to 70% of the energy content of the methane gas is utilized.

### **Little Maumelle Wastewater Treatment Facility**



This new treatment facility has been over 30 years in the making, beginning with the Little Rock Board of Directors adopting resolution No. 4,159 authorizing LRW to obtain a grant to build a new treatment facility in 1969. Because of public input and political pressure, LRW built the Little Maumelle Pump Station as a temporary solution in 1987. However, the need for the plant still existed and many tracts of land were evaluated for the much needed new wastewater treatment facility.

The sewer from the Little Maumelle Basin and portions of West Little Rock had been conveyed all the way from Pinnacle Valley Road to the Adams Field Treatment Facility near the Little Rock National Airport. With the completion, the new treatment facility will serve the residents of the Little Maumelle River Valley with the best of accommodations. The treatment facility is the only treatment facility in Arkansas to have a tertiary treatment process. The facility has odor control and the biosolids are conveyed from the new wastewater treatment facility to the FCWTF. The wastewater is disinfected using Ultra Violet light instead of chemicals, which is better for the environment. The outfall point (where the disinfected wastewater or effluent will be discharged) has a special diffuser that will scatter the effluent so as not to have one giant flow of treated wastewater. Aesthetically speaking, the facility is completely covered and constructed with a brick façade to match the theme of the nearby Pinnacle Mountain State Park.

The Little Maumelle Wastewater Treatment Facility became operational in September, 2011. The ribbon cutting and dedication ceremony was held November 10, 2011.

### **Peak Flow Attenuation Facility**



The purpose of this project is to improve the hydraulic capacity of the collection system during heavy rain and address wet weather sanitary sewer overflows in the western end of the Fourche Bottoms.

LRW is required to reduce sanitary sewer overflows in Little Rock because of the Settlement Agreement between LRW and the Sierra Club. The Peak Flow Attenuation

Facility project is designed to handle a storm where five inches of rain would fall within 48 hours, which is also referred to as a 'peak flow event.'

At a cost of nearly \$55 million, the project consists of constructing a 50 MGD pump station near Mabelvale Pike, 11,500 linear feet of force main pipe, two diversion structures and a 30 million gallon storage facility (a 10 million gallon and a 20 million gallon concrete structure.) The detention basins will store water generated by rainfall and then discharge into the collection system when flows return to normal. The Arch Street Pump Station rehabilitation and hydraulic upgrade project is being constructed simultaneously with the Peak Flow Attenuation Facility project. These projects complement each other in that they both enhance the hydraulic conveyance capacity of the sanitary sewer system through the Fourche Creek Bottoms, thereby reducing sanitary sewer overflows during wet weather events.

A parallel force main to be used in combination with the existing force main during peak flow events is currently being constructed. By utilizing both the existing force main and the new parallel force main, the internal pressure during a peak flow event can be minimized.

LRW engineers estimate that the Peak Flow Attenuation Facility will only be utilized 10 to 15 times annually.

### **Community Service Programs**

LRW currently has four outreach programs to ensure its customers have all the information necessary to make good choices regarding their actions affecting the sewage system and the environment. A description of the outreach programs follow.



Sewer line stoppage due to grease buildup accounts for 70 to 80 percent of all dry weather overflows – a hazard for the environment and a problem for the

public because it interrupts the smooth operation of the Little Rock Sanitary Sewer Collection System. Due to the effect that grease has on the system, the Little Rock Wastewater has initiated an innovative effort to educate consumers about the proper disposal of household cooking grease.



Captain Sewer is Little Rock Wastewater's water conservation representative buccaneer. He is available for classroom appearances where he discusses water conservation and

environmental issues. Kindergarteners through 6th graders enjoy this fun and interactive presentation.



LRW has made a huge leap towards a cleaner, environmentally affable future with our public education Stay Connected program. Currently, the message is one of awareness and preservation: know where your sewer service line is and have it checked for cracks, breaks and debris. With an involved advertising campaign and service line inspection plan, LRW has made significant steps in

public awareness and education of sewer service line responsibility and maintenance.

### **Awards and Recognitions**

Certificate of Achievement for Excellence in Financial Reporting - The Government Finance Officers Association (GFOA) has awarded the Finance Department of LRW the Certificate of Achievement for Excellence in Financial Reporting for its Comprehensive Annual Financial Report (CAFR). This is LRW's sixth consecutive year to accomplish this feat.

Distinguished Budget Presentation Award - The Government Finance officers Association (GFOA) of the United States and Canada awarded Little Rock Wastewater the GFOA'S Distinguished Budget Presentation Award for its budget for 2010.

Sterling Agency Award - LRW was named a 2010 Universal Public Purchasing Certification Council (UPPCC) Sterling Agency for having a fully certified staff for three (4) consecutive years.

NACWA Peak Performance Awards -The National Association of Clean Water Agencies (NACWA) awarded LRW two Silver Peak Performance Awards for both treatment facilities, the FCWTF and AFWTF for 2010.