Little Rock Residents' Perceptions of Wastewater Reuse and the Little Rock Water Reclamation Authority

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Abstract

As the threat of water scarcity grows across many regions, wastewater reuse has become an increasingly common strategy for expanding and stabilizing water resources (Garrison et al., 2025). In water-rich states like Arkansas, however, the urgency to adopt reuse practices has historically been limited. The Little Rock Water Reclamation Authority (LRWRA), Little Rock's sewer utility, is exploring the feasibility of implementing a wastewater reuse program to support long-term water sustainability. Using focus group discussions and survey responses, this research assessed Little Rock residents' perceptions of wastewater reuse by examining residents' knowledge, attitudes, and concerns related to non-potable reuse and the local utility. We found respondents had widespread acceptance for wastewater reuse, however, some had concerns regarding health and safety issues, environmental effects, and implementation costs. Given these results, we recommend strategies to help improve awareness and acceptance of wastewater reuse, along with best practices for public communication.

Little Rock Residents' Perceptions of Wastewater Reuse and the Little Rock Water Reclamation Authority

Water scarcity, driven by climate change and human activity, has profound implications for environmental sustainability and public health. Some climate models project that the Southern United States will see increased drought frequency and intensity, threatening water security despite the region's water-rich history, especially in Central Arkansas (Chiang et al., 2018). Wastewater reuse has emerged as a critical strategy for diversifying water resources, enhancing resiliency by using the treated water as a replacement for fresh water, thus conserving freshwater. In states already facing drought conditions, such as Arizona and Nevada that recycle 52% and 85% of their wastewater, reuse can correspondingly decrease the need for freshwater for non-drinkable uses (non-potable) (Garrison et al., 2025).

Conversely, in Arkansas the lack of an immediate, visible water emergency has resulted in under-investment in sustainable infrastructure due to complacency, leaving the state vulnerable to water scarcity during a prolonged, extreme drought. Central Arkansas's primary drinking water sources are Lake Maumelle and Lake Winona, both surface water reservoirs. Surface water is inherently vulnerable to drought due to changing precipitation patterns. This means a multi-year drought could severely deplete lake levels, threatening the region. Relying solely on these two sources is risky, but non-potable reuse could be a critical diversification strategy. The problem for Arkansas, therefore, is not that of an active crisis, rather, it is a deficiency in strategic foresight and risk management.

The Little Rock Water Reclamation Authority (LRWRA) plays a vital role in water stewardship and is essential to the state's long-term water security efforts. LRWRA was formed when Adams Field came online in 1961 as the first treatment facility in the city to manage wastewater, addressing a critical need for public health. Prior to 1961, there was no centralized

system for effluent removal, but with the 1970s came new regulations, requiring LRWRA to use biological processes for wastewater treatment and marking a turning point that expanded their mission from public health to environmental stewardship (LRWRA, 2025b). Serving over 70,000 customers and maintaining 1,400 miles of sewer, they ensure that wastewater is transported from homes and businesses to three treatment facilities: Adams Field, Fourche Creek, and Little Maumelle (LRWRA, 2025b). As Little Rock has grown into a mid-sized city, LRWRA is now responsible for treating upwards of 56 million gallons of wastewater per day (LRWRA, 2025b). The proposal to recycle wastewater and use it for non-potable reuse is a timely, innovative, and incremental approach to mitigating the risks posed by population growth, digital infrastructure, and climate change (Gosling et al., 2016).

Project Description

In partnership with LRWRA, this project will help the utility embark on a new mission to make Little Rock more sustainable (LRWRA, 2025c). Diving deeper into environmental stewardship and focusing on conserving the city's water supply, LRWRA has tasked itself with ensuring long-term sustainability through non-potable wastewater reuse. Our research efforts are crucial to solidifying public approval for a project that will diversify the city's water source proactively in the face of the potential hardships posed by climate change such as increased risk of drought and subsequent water scarcity in the South (Gosling et al., 2016).

Better understanding of concerns and support levels will aid LRWRA in developing communication strategies, informing conversations with regulators, implementing wastewater reuse plans in accordance with public values, and clearing a path for future reuse initiatives in other Arkansas communities.

Research Questions

Our research team aimed to answer the following research questions: 1) What are the knowledge, attitudes, and concerns about wastewater reuse among Little Rock residents? 2) What is the general public's understanding of the local wastewater utility?

Literature Review

Usage Type

Various studies on wastewater reuse show that the willingness of respondents to accept wastewater reuse depends heavily on the types of reuse and the level of human contact with recycled wastewater. Li (2021) studied the preferences of wastewater uses through a survey on lawn irrigation, food irrigation, and drinking, and which type of water, conventional, recycled, or if they were unsure what they would prefer to be used for these purposes. Similarly, Daghighi (2020) examined the relationship between knowledge of wastewater reuse and respondents' comfortability with its various uses through interviews, probing respondents' attitudes towards various wastewater uses with different degrees of contact. Both studies found that contact level affected responses on willingness to accept wastewater reuse, with respondents being less likely to accept wastewater reuse in close proximity (Li, 2021; Daghighi, 2020). According to Daghighi (2020), reducing the public's contact with wastewater reuse should lead to a higher number of positive comments, and hence, a higher chance of public endorsement of wastewater reuse.

Additional research supports this pattern. Msaki (2022) conducted mixed-method studies that included interviews and questions regarding various uses for treated wastewater. Pathiranage (2024) and Chen (2015) utilized surveys which included multiple choice questions regarding willingness to accept wastewater reuse based on their use preferences. In each study, respondents showed a greater inclination towards outdoor uses, such as farming and irrigation, than they did

toward indoor uses, such as laundry and cleaning (Chen, 2015; Msaki, 2022; Pathiranage, 2024). These findings highlight the importance of use-specific communication strategies when proposing wastewater reuse.

Baghapour et al. (2016) further demonstrated resident's perceptions of different uses, finding that they were far more likely to accept recycled water for irrigation or firefighting while adamantly rejecting it being used for drinking water. However, reception varies contextually, as Baghapour et al. (2016) found support for usage in agricultural irrigation, while Verhoest et al. (2022) observed increased hesitation when the crops watered were intended for human consumption. This highlights the importance of understanding local knowledge and perceptions of the topic.

Several studies also found that individuals are more receptive to wastewater reuse methods that do not involve personal contact (Akpan et al., 2020; Oteng-Peprah et al., 2018; Faria et al., 2022). For example, Faria et al. (2022) discovered that "there was a greater acceptance of participants for indirect uses, such as watering plants and gardens (30%) and cleaning in general (31%)" and a strong rejection for direct use, such as drinking (3%), cooking (4%), and washing food (4%) (p. 439). These findings offer guidance for stakeholders to keep in mind when designing reuse programs.

The "Yuck" Factor

The "yuck" factor describes feelings of disgust or fear that arise in reaction to the perception that treated wastewater may be unsafe due to its origins, and it greatly influences attitudes regarding recycled wastewater reuse. As Wester et al. (2015) explains, this response is rooted in psychological predisposition. Individual comfort and discomfort with water reuse are tied to pathogen-related disgust levels. Strong negative emotions stemming from fear of disease

can cause rejection, even when participants are aware of safety measures and treatment efficacy (Phala and Pewa, 2023; Stotts et al., 2019).

The intensity of disgust is highly contingent on the recycled water's proposed purpose. The literature repeatedly demonstrates that non-human contact uses, such as irrigation, garner higher public acceptance. For instance, Moya-Fernandez et al (2021) showed that "psychological repugnance" and "perceived health risks" caused the Spanish public's rejection of recycled water for personal use, even during a severe water shortage affecting three-fourths of the country. In the face of dwindling supplies, they deemed recycled water only appropriate for non-potable purposes that were not in close proximity to humans. Therefore, disgust is a significant psychological barrier that is partly responsible for the difference in acceptance of potable reuse vs non-potable reuse (Massoud et al., 2018). Cognitive research on health perceptions further uphold these findings. Ding et al. (2022) revealed that participants prioritized information about water treatment processes over potential environmental benefits, indicating that health concerns related to reuse's proximity to humans are more influential than the environmental benefits of reuse in shaping acceptance (Ding et al., 2022). Consequently, concerns and disdain for wastewater reuse typically stem from reasons like potential uses for crop irrigation and drinking (Verhoest et al., 2022; Baghapour et al., 2016).

While disgust is an overwhelming psychological barrier to public acceptance, high-risk perceptions can be moderated by awareness, education, and media framing. Studying a community in Utah city that did not have an operating water reuse system, Flint (2021) found that health risk perceptions were low when water reuse was used for irrigation, and awareness of its benefits offset risk perception. Conversely, Wade (2021) demonstrated that a lack of

knowledge of the wastewater reuse process is correlated with higher perceived risk and disgust, as tours of a local water reclamation facility reduced perceived risk and disgust.

While awareness is a moderating factor, education has the largest impact on risk perception and acceptance (Garcia-Cuerva, 2016). The feeling of disgust can also be exacerbated or moderated by media framing. Goodwin et al's (2018) study analyzing media framing surrounding a water reuse proposal in the UK found that sensationalized, risk-focused coverage often fostered strong, negative emotional responses. On the other hand, balanced reporting was conducive to a more moderate understanding and acceptance.

The disgust inspired by wastewater is a significant psychological barrier that serves to explain opposition to potable reuse and higher acceptance of non-potable reuse. (Massoud et al., 2018) However, this obstacle to acceptance is surmountable. The "yuck" factor's negative effect on risk perceptions and acceptance is reduced through educational and awareness-building initiatives that cultivate trust (Santo et al., 2024).

Demographic-Based Acceptance Rates

There is conflicting literature regarding the role of factors such as age, gender, and socioeconomic status in shaping perceptions about wastewater reuse. According to Kaiser et al. (2024), age was a significant factor of acceptance in Brazil, as people between thirty and forty-five were more likely to support reuse compared to other age groups. However, the same study found rates of acceptance between sex, race, and income were insignificantly different (Kaiser et al., 2024). It is then clear that most demographics and their effect on perception are nuanced. One factor that appeared strong throughout was that an individual's education level is a particularly salient and consistent mediator for acceptance.

Wester et al. (2015) found that less-educated participants were more likely to show discomfort regarding water reuse, further suggesting education as a predictor for disgust level. Two studies found a staggeringly high support for reuse in their study, but both of their results were directly affected by the sample being students and staff of a Canadian and American university, respectively, further supporting the claim that higher education achievement levels might be associated with elevated rates of acceptance (Velasquez and Yanful, 2015; Johnson et al., 2015).

Additional studies identified direct correlations between higher education levels and acceptance of wastewater reuse (Garin et al., 2020; Garcia-Cuerva et al., 2016; Wade et al., 2021). Most studies use the traditional definition of education level, referring to the highest formal level of schooling a person has completed (Garcia-Cuerva et al., 2016; Wade et al., 2021). For example, Garcia-Cuerva et al. (2016) found that higher education levels (BS, MS, or PhD) correspond to the highest percentage of respondents who are concerned and supportive of water reuse. Collectively, these works highlight how contextual demographic factors are, and that education level explicitly, rather than just an understanding of the process, serves as a mediator for acceptance.

Knowledge about Wastewater Reuse & Trust in Authorities

The level of knowledge about treatment processes and the degree of trust in authorities are closely interconnected in shaping public acceptance of wastewater reuse, and the two often reinforce one another rather than operate independently. Several studies show that knowledge alone can encourage acceptance. For example, respondents in Beijing demonstrated limited understanding of wastewater reclamation but expressed willingness to use reclaimed water once informed, suggesting that improved public communication could further enhance acceptance

(Chen, 2015). Providing clear and direct education appears to strengthen willingness to use recycled water as Garin et al. (2020) observed that hesitation to accept and use wastewater reuse significantly decreased when people were given information about treatment processes. Wade et al. (2021) took this a step further by seeing if this form of public engagement also impacted perception, comparing one group that received only written information on wastewater treatment and reuse to another group who were given a tour of their local wastewater treatment facility. They discovered that the latter individuals had generated more memorable knowledge and reduced feelings of disgust toward reuse (Wade et al., 2021, p. 271).

However, this knowledge is most influential when it comes from a source the public trusts. Akpan et al. (2020) found that respondents were more accepting of implementing a wastewater reuse project if it was endorsed by "doctors, professors, and experts in that field and state and federal government" (p. 11). Similarly, Stotts et al. (2019) found across four different countries that knowledge must come from trusted sources to meaningfully influence acceptance. This demonstrates that trust enhances the effectiveness of knowledge, and knowledge can strengthen trust when it demonstrates competence and transparency. With knowledge increasing understanding and trust increasing credibility, together, they function as mutually reinforcing drivers of public acceptance of wastewater reuse.

The literature concluded that a coherent strategy needs to be developed before investing in expensive and time-consuming water reuse projects (Massoud et al., 2018). This is relevant to our project because utilities considering massive infrastructural undertakings need to create communication channels with the public, increase public participation, and ultimately integrate them in the decision-making process.

Methodology

Data Collection

This exploratory study of Little Rock residents' knowledge, attitudes, and concerns of water reuse adhered to a mixed-methods approach**,** collecting both qualitative and quantitative data. Data collection was conducted sequentially. First, we employed a public survey, which was open from February 1st to February 28th. 103 out of 130 survey takers were qualified to participate based on age and location requirements, which included being at least 18 and a Little Rock resident. Quantitative surveys were distributed via Qualtrics. A link with a QR code was featured in multiple emails from LRWRA, and took approximately five to ten minutes to complete. Participants were asked questions pertaining to their trust in and understanding of LRWRA, as well as their knowledge, attitudes, and concerns relating to wastewater reuse. Participants completed a brief knowledge assessment with multiple-choice, ranking, and free-response questions that do not just gauge their knowledge of water reuse, but also the purpose of LRWRA as an organization. Then, attitudes and trust were assessed by multiple-choice questions and matrix questions. Before the end of the survey, we collected nominal demographic information such as zip code, age, race, gender, and level of education to see whether any of these factors correlate with variables such as acceptance of water reuse and trust in LRWRA. At the end of the survey, ratepayers were asked if they were interested in participating in a focus group discussion regarding water reuse in Little Rock.

Focus groups were responsible for the bulk of our qualitative data collection and used to further explore and gain a better understanding of the attitudes, knowledge, and concerns of wastewater reuse, as well as general knowledge and trust of LRWRA. We conducted three focus groups to explore our findings in depth, collecting detailed information about how information,

feelings, and emotions contribute to the responses that ratepayers choose on each of their respective surveys. Focus group discussions consisted of 2-4 participants, who may or may not have had some knowledge of wastewater reuse as a result of participating in the survey. All focus groups were conducted in-person at various community centers and the CALS library, each one taking about one hour. For each one, a moderator used a structured discussion guide with open-ended questions such as "How do you think LRWRA operates as a utility?" After obtaining the written consent of ratepayers, focus group discussions were audio-recorded and transcribed. All identifying information was removed to anonymize participant identities, and recordings were stored on a Google Drive folder accessible only to the researchers. After this study was approved by the University of Arkansas Institutional Review Board with the assurance of confidentiality and voluntary participation, participants for the surveys were recruited using several strategies.

Participants

Surveys

Recruitment strategies included leveraging relationships with neighborhood association leaders by emailing the survey to their members, administering in-person surveys at community events, and posting flyers with a QR code at local businesses. At community events, we also had flyers with a QR code that participants could scan to access the survey if they did not wish to take it on-site with an Ipad. Lastly, participants were recruited by emailing individuals in the group members' personal networks. Incentives for survey participation included a raffle where four participants were randomly selected, each receiving an electronic $25 Amazon gift card via email. Because these recruitment strategies did not result in all ratepayers having an equal

opportunity to participate, we used non-probability sampling, specifically convenience sampling. Included in the survey was a short demographic questionnaire (see appendix a).

Focus Groups

Participants for the focus groups were recruited both through the same methods as the survey but also through the survey itself. Survey participants were asked by the end if they wished to participate in a compensated focus group (see appendix a). The incentives used for focus group participation included a $50 VISA or Walmart gift card for each participant, provided by LRWRA. Focus group participants were at least 18 years of age and living within the boundary of the city of Little Rock. Before the focus group started, participants were given the same demographic survey as the survey but on a physical print out (see appendix a).

Measures

Surveys

Perception variables included participants' knowledge about wastewater reuse (How familiar are you with the term "wastewater reuse"?), participants' attitudes toward wastewater reuse (How acceptable do you think the following uses of reclaimed water would be in your community?), and participants' concerns toward wastewater reuse (How concerned are you about the adoption of wastewater reuse practices in Little Rock?). Most of the variables used a 5-point Likert scale for response options (i.e. Not familiar to very familiar) while others were free-response, multiple-choice, and ranking questions. Composite measures were created for trust in LRWRA, knowledge of wastewater reuse and LRWRA, acceptance of wastewater reuse, and concern regarding wastewater reuse

Knowledge of the wastewater utility was measured by asking participants to report what they thought LRWRA does and how they think the wastewater treatment process operates.

(Which of the following best describes the role of the LRWRA?) Trust in LRWRA was measured by asking participants to what extent they trust LRWRA to manage wastewater safely and responsibly. This variable included a 5-point Likert scale for response options. (i.e. No trust to very trusting) See Appendix A for the complete survey.

Focus Groups

Focus group questions focused on knowledge, attitudes, and concerns about wastewater reuse. For example, focus group facilitators asked participants what comes to mind when they hear the term "wastewater reuse." Focus group questions also focused on the knowledge and trust in LRWRA. Facilitators asked participants how familiar they are with the services that LRWRA provides and how much they would trust LRWRA to handle wastewater reuse. See Appendix B for the full list of focus group questions.

Analysis

Data analysis occurred sequentially according to our mixed-methods research design. Quantitative data was collected and analyzed to identify levels of concern, trust, and knowledge of wastewater reuse and LRWRA, while qualitative data was transcribed and analyzed to explain participants' perceptions of wastewater reuse and LRWRA.

After our survey closed, data pertaining to our variables were analyzed after securely downloading data from Qualtrics and uploading it into STATA. We presented these statistics via figures and graphs.

For our qualitative analysis, we began by transcribing audio recordings from the focus groups verbatim. All members of the research team read the transcripts to familiarize themselves with the data. Then, we created codebooks inductively by looking for recurring themes in the data we collected, and deductively by looking at codes from the existing literature. The final

codebook listed and defined each code and subcode that we used in our analysis, how to apply them, and exemplar quotes from focus groups. Following the organization of our data, we engaged in a collaborative qualitative analysis to find exemplar quotes and sort codes into themes.

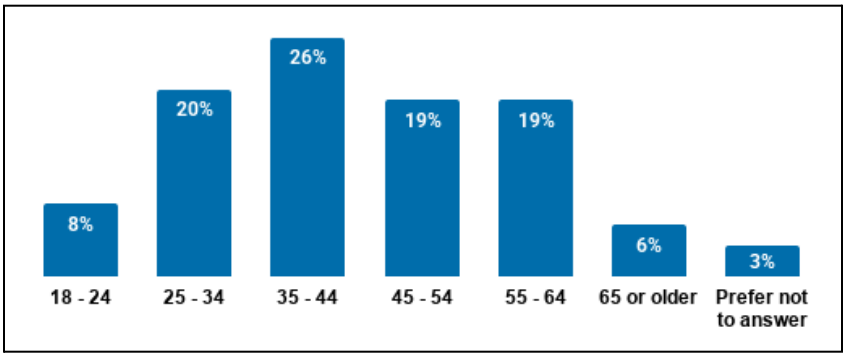
In our final report, quantitative and qualitative analyses were synthesized to provide LRWRA with a more comprehensive understanding of the public's knowledge, attitudes, and concerns regarding waste reuse and LRWRA. Survey results described what research participants thought about wastewater reuse, and focus group themes explained the reasons behind participants' particular attitudes, concerns, and knowledge of wastewater reuse.

Results

130 people elected to take the survey, however, as the study required respondents to be a Little Rock resident, only 103 respondents qualified. Not all surveys were completed in their entirety, therefore some questions have differing sample sizes. 51% of survey respondents identified as female, 42% identified as male, 2% identified as non-binary/third gender, and 4% preferred not to say. Respondents' ages varied greatly, ranging from 18-24 to 65 or older as can be seen in Figure 1.

Figure 1

Age Distribution of Respondents



A majority of survey respondents had at least a bachelor's degree (79%) and just 19% of respondents had an associate degree or less. 57% of survey respondents identified as White, 28% identified as African American or Black, and 5% identified as Hispanic or Latino.

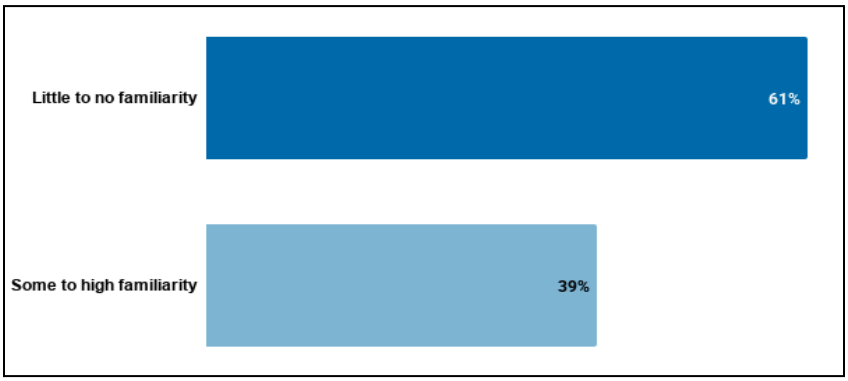
Nine individuals total participated in the focus groups, four of which identified as male and five identifying as female. All of the focus group participants had at least a bachelor's degree. A majority of the focus group participants (n=5) identified as White, three participants identified as African American or Black, and one participant identified as Hispanic or Latino. One participant was between the ages of 18–24, three were 25–34, one was 35–44, four were 45–54, and one was aged 65 or older.

Knowledge of Wastewater Reuse

39% of respondents reported that they had some to high familiarity with wastewater reuse (n=99). The majority (or 61%) felt they had little to no familiarity, as seen in Figure 2. Survey respondents demonstrated less familiarity overall in written responses, often showing only partial awareness of wastewater treatment and potential reuse applications rather than a clear understanding of reuse.

Figure 2

The Majority of Respondents (61%) Had Little to No Familiarity with Wastewater Reuse



Responses to the open-ended survey question, “In your own words, briefly define wastewater reuse” (n=84) were categorized into four levels of understanding: good, moderate, poor, and no understanding. A small number of respondents demonstrated a good understanding of wastewater reuse (n=5), providing clear and accurate definitions including information about both the treatment process and reuse types. The largest group showed a moderate understanding of the concept (n=37), describing wastewater reuse in general terms but lacking details regarding either the treatment processes or specific reuse applications. For example, one respondent defined reuse as, “Utilizing sewer water that has been treated for some purpose.” 29 survey respondents provided unclear or incomplete definitions, displaying a poor understanding of reuse. Respondents who demonstrated a poor understanding of reuse often showed a familiarity with the treatment of wastewater, but lacked an understanding of how treated wastewater can be used for other applications. Finally, 13 respondents indicated a complete lack of knowledge of wastewater reuse, giving incorrect responses or stating that they did not know.

In contrast, focus group participants tended to demonstrate a higher level of familiarity with wastewater reuse overall. One participant described wastewater reuse as “the process of treating used water and making it suitable for human consumption. Not for drinking purposes.” Focus group participants more consistently reflected a general understanding of both the treatment process and various reuse types.

Attitudes towards Wastewater Reuse

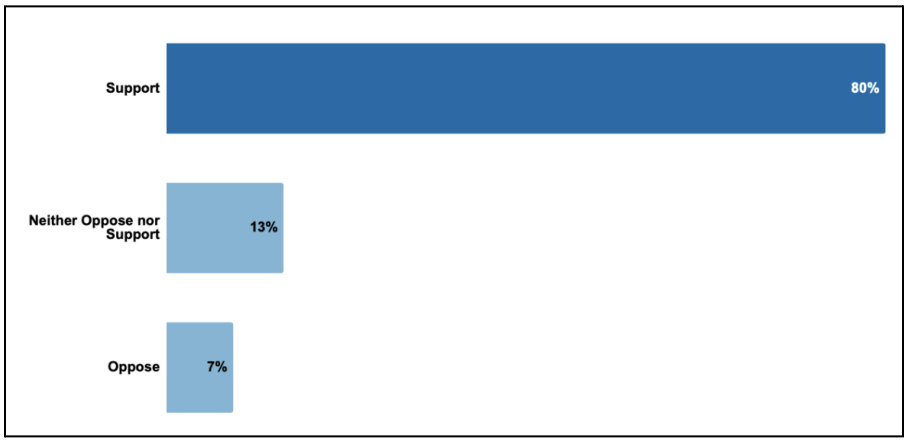
General Support of Wastewater Reuse

A large majority of respondents (80%) reported that they are in support of the implementation of wastewater reuse in Little Rock (n=95). Just a small percentage of

respondents reported that they either oppose (7%) or neither oppose nor support (13%) wastewater reuse.

Figure 5

The Majority of Respondents Support Wastewater Reuse (80%)



Reuse is Logical. Focus group participants echoed this sentiment with many feeling that reusing wastewater for non-drinking purposes is simply logical. One participant stated, "My general take away from it is we just really have so much water it makes sense to use it for non-drinking purposes." Meanwhile, others thought that reuse was already a reality. They stated, "I honestly thought that I had [used reused water] my whole life. If you would have told me that we were already using it, like that just makes sense to me."

Deference to Experts. Several participants emphasized the judgment of experts in the field after acknowledging their lack of expertise. One survey respondent shared, "I mean I would want to follow the science. I'm not super familiar with the evidence, so my opinion is uninformed. If the science says it's safe and the economics support it, it sounds like a good idea to me." One focus group participant also shared that they would put any personal reaction secondary to any research regarding wastewater reuse.

***Indifference to Specifics*.** Another related opinion shared by participants was that they are indifferent regarding any future plans of wastewater reuse in Little Rock as long as laws and health regulations are properly followed. For example, one participant stated, “I don't always need to know how the sausage is made...the less I know, the better." This adage reflects a preference to trust that experts are adhering to regulatory standards, rather than engaging with procedural specifics.

Transparency. While survey results overwhelmingly indicate support for wastewater reuse, many proponent responses were tied to the assurance of transparent practices. Participants emphasized the importance of transparency in any form of wastewater reuse practices that will be implemented, including notifying the public. One participant summed this feeling up well, “I'm going to say they should go ahead and pursue this, just be transparent about it so we know what they're doing.”

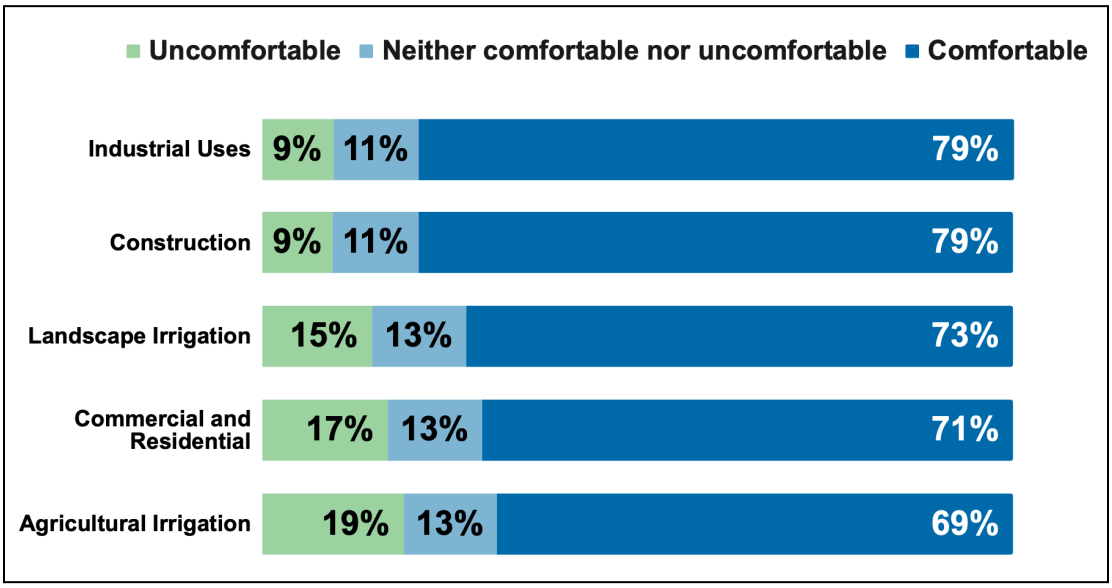
Comfort Across Use Types

Respondents (n=96) reported a high level of comfortability when presented with a range of non-drinking applications as shown in Figure 3. Comfort levels were the highest for construction and industrial uses (both 79%), followed by landscape irrigation (73%) and commercial and residential uses (71%). Agricultural irrigation had slightly lower levels of comfortability, but the majority of respondents (69%) still reported they would be comfortable with this use type. A focus group participant shared a similar sentiment, “Landscaping, industrial, I think that is fine. I would love to see those uses.” In conversation, another participant shared, “I would definitely want to do industrial, and I think that would be an easy pill for people to swallow.” Contrastingly, focus group participants (n=9) also expressed some differing perspectives, specifically related to residential and agricultural uses. One participant shared, “I

definitely think you have the residential at the bottom, let's not go there possibly." Another participant expressed they were least comfortable with agricultural uses on food crops stating, "the only real reservation that I have to water reuse would be agriculture, just knowing how much the water has been purified and contaminated before it's going on like plants and crops that we use that might not be cooked."

Figure 3

Majority of Respondents (at least 69%) Comfortable with Each Use Type



While focus group participants shared an increased discomfort with residential and agricultural uses, one participant mentioned that after receiving a tour of the LRWRA facilities their level of comfortability increased stating, "I would say my comfortability did improve when I toured the facilities a couple of years ago." This suggests that touring wastewater treatment plants could help increase people's comfort with wastewater reuse.

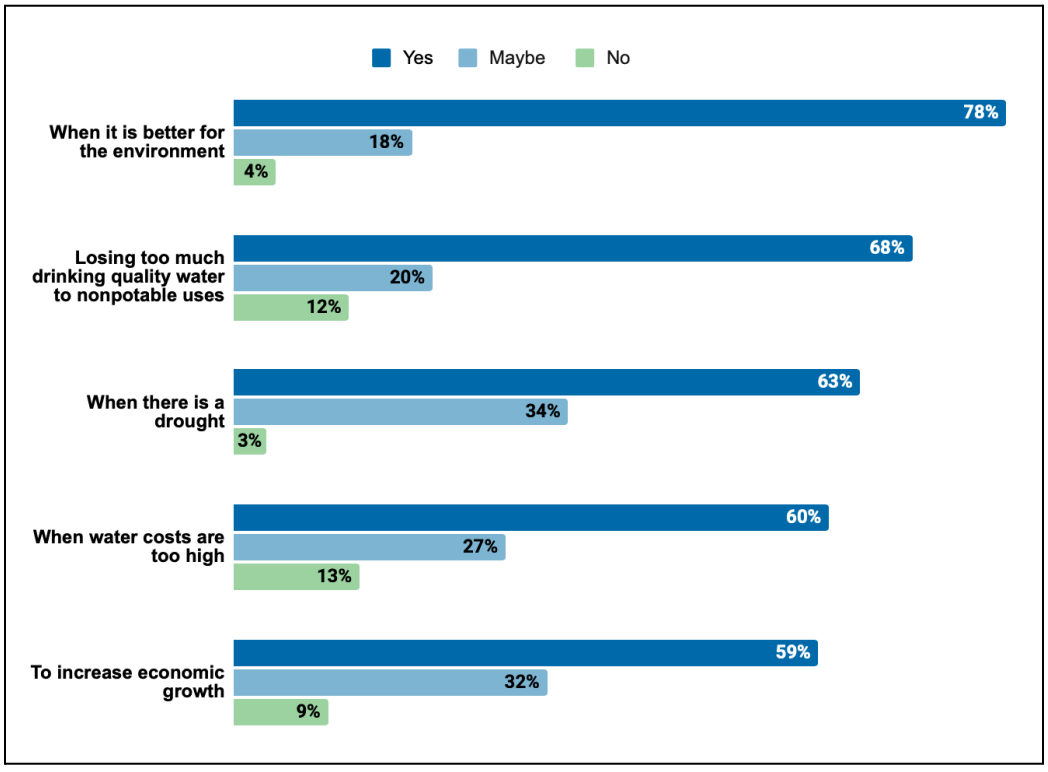
Scenario-Based Support for Wastewater Reuse

In addition to differences by use type, Figure 4 shows that the majority of respondents (n=96) reported high levels of acceptance of wastewater reuse across a range of scenarios.

Respondents were most accepting of wastewater reuse when framed as environmentally beneficial (78%), followed by situations in which an excess of quality water is lost to non-potable uses (68%). A majority of respondents also reported high acceptability levels towards reuse during drought conditions (63%) and when water costs are too high (60%). Several focus group participants also expressed high acceptance of wastewater reuse for environmental purposes. One participant shared, “I think I kind of come from a place like, if we can utilize it now to prevent a crisis, then why wouldn't we?” In relation to preventing losing too much drinking quality water to non-potable uses, many focus group participants mentioned using treated wastewater for AI data centers. A participant highlighted, “I’m very comfortable with all of them, but industrial, especially with AI data centers that use so much water, that’s like my most comfortable. I think that would be a good resource for that.”

Figure 4

Respondents (at least 59%) Indicate that Wastewater Reuse is Acceptable in Several Scenarios



Concerns Regarding Wastewater Reuse

Health and Safety Concerns

Despite positive perceptions, qualitative findings from both the survey and the focus groups showed several recurring concerns regarding implementation. Primarily, there was a pervasive sense of anxiety related to health and safety issues stemming from potential exposure to harmful pathogens or contaminants that remain in the treated wastewater. This concern was largely driven by perceived risks of treatment system failure and unintended human exposure, specifically with children. One survey respondent highlighted the risk of system failure, stating that "I would be concerned that the water wouldn't truly be clean…The use of unsanitary water on food because some workers didn't pay attention could make people sick." These concerns were corroborated by focus group participants who mentioned the possibility of children ingesting treated wastewater if it is used for toilet flushing or decorative fountains. One participant shared, "A little kid could go in there and get their hand in the fountain." Another participant voiced a similar concern, "If it's in a public space, how do you keep a kid or a dog from going and drinking that water?"

Environmental Concerns

Additional concerns raised throughout the research included potential environmental factors that may result from long-term wastewater reuse, such as chemical buildup and energy use. One participant voiced concern that harmful substances and chemicals may not be completely eliminated from the treated water, potentially posing risks to the environment. Echoing this concern, another focus group participant asked, "If there's a lot of dissolved soaps, or something like that over time, do those dissolved soaps in an application cause soil contamination?"

Economic Concerns

Economic factors also emerged as a concern among participants, with some noting the potential high costs of implementing wastewater reuse systems. Others questioned whether the cost of the infrastructure was necessary, for example one survey respondent wrote,

> Why should the ratepayers pay for the additional infrastructure needed by LRWRA to provide wastewater reuse when CAW has more than enough water available to sell. I get wastewater reuse in the desert where water availability is an issue but Arkansas and CAW are water rich.

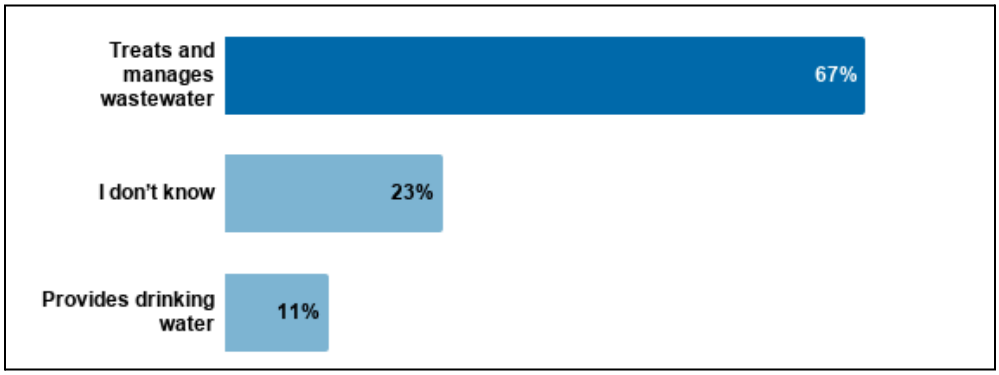
Understanding of the Local Wastewater Utility

Knowledge of LRWRA and Wastewater Treatment Process

The majority of survey respondents (67%) correctly identified the role of LRWRA as treating and managing wastewater as shown by Figure 6 (n=93). 23% of respondents reported that they did not know the role of the utility and 11% incorrectly identified LRWRA as providing the local drinking water.

Figure 6

The Majority of Respondents (67%) Correctly Identified the Role of LRWRA (n=93)



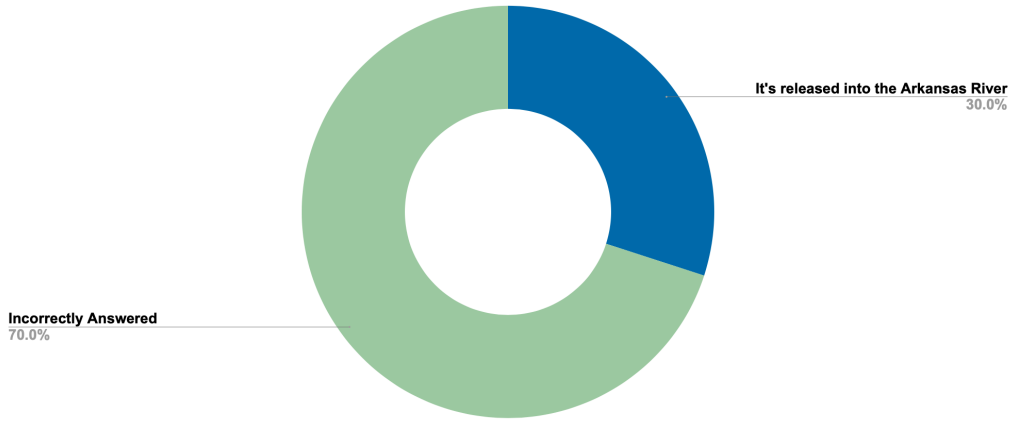
While many survey respondents correctly identified the role of LRWRA, focus group participants often reported knowing that the utility existed but possessed little to no knowledge

about its operations. One focus group participant highlighted this when asked how much knowledge they had of LRWRA, “I'm going to say not much. I mean, yes, I know it exists.”

Only 30% of survey respondents correctly identified that LRWRA discharged water in the Arkansas River (n=93). A majority (70%) were unaware of where treated wastewater is discharged.

Figure 7

Majority of Respondents (70%) Incorrectly Identified Water Discharge Location



Focus group participants generally demonstrated basic to limited knowledge of the topic aligning with results found in the survey. Some participants were able to provide basic descriptions of the water treatment process. For example, one participant shared, “My understanding has always been that there's a holding area, a treatment area, and then, potentially another holding area for testing and things like that, where you can either loop it back through treatment or send it out.” However, most participants shared limited knowledge of the wastewater treatment process.

Perceptions of LRWRA

When asked how they would describe their perception of LRWRA, a majority of respondents (58%, n=92) reported having a positive perception of their local wastewater utility.

41% of respondents reported that they have neither a negative or positive perception of LRWRA, and a very small percentage (1%) reported having a negative perception.

Figure 8

Majority of Respondents (58%) Held Positive Perceptions of LRWRA

Many focus group participants expressed positive views of LRWRA consistent with the survey results, while others reported more neutral perspectives. Expressing limited knowledge of the utility, one participant still had a positive perception of LRWRA stating, “If you flush the toilet and it goes away, you know, that's probably the best thing you could say about a water treatment company.” Many participants echoed this sentiment, indicating that they did not have negative perceptions of LRWRA largely due to limited interaction with or knowledge of the utility. One participant articulated this well, stating, “You're doing something right if people don't know you're doing anything at all.” Several participants noted that their perceptions of LRWRA were shaped by the absence of negative media coverage or public scandals.

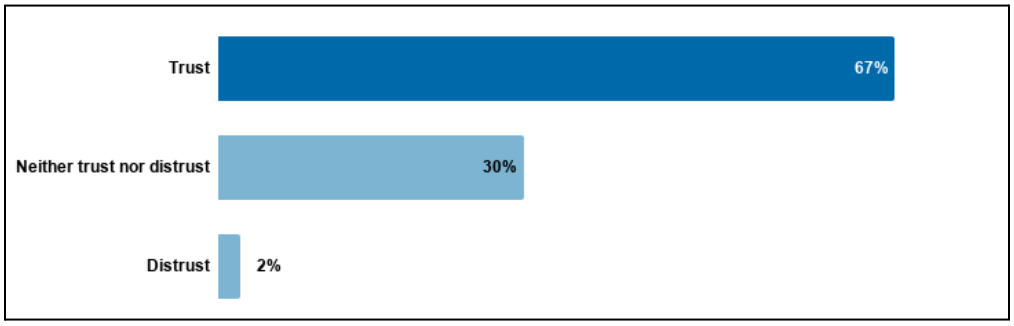
Trust in LRWRA

A majority of respondents (67%) reported that they trust their local utility to manage wastewater safely and responsibly (n=92). A very small percentage of respondents (2%) reported distrust in LRWRA, while 30% indicated a neutral level of trust. The high level of trust shown in survey results was reflected in feedback from focus group participants. One participant shared, “I

trust LRWRA… is going to follow the law and regulations." Echoing this perspective, another participant highlighted their trust in LRWRA's ability to follow regulatory standards stating, "It is as long as we follow the proper steps. They are as qualified as any other water treatment company."

Figure 9

Majority of Respondents (67%) Trust LRWRA's Management of Wastewater



Note. Due to rounding, percentages do not equal 100%

A common finding was that, although participants expressed a general level of trust in LRWRA's management of wastewater, many indicated a desire for more knowledge about the utility before feeling fully confident in moving forward with wastewater reuse in Little Rock. One focus group participant summed this up well in their statement, "I can't… just automatically give them full confidence and trust, unless I know that there's some sort of plan and kind of what to expect." This ties back to the previously identified need for transparency, as participants expressed confidence and trust in LRWRA's ability to manage wastewater but indicated that they expect clear communication and transparency if the utility moves forward with any reuse projects.

Communication Preferences

Media. Focus group participants shared various channels of communication that they would prefer to stay informed about and engaged with the utility. An overwhelming majority of

focus group participants emphasized the importance of LRWRA being active on social media. One participant suggested that LRWRA post more educational content sharing, “Like on Instagram, they… could show, like the process of like, how the things [water treatment process] are done like how it's made.” Utilizing and collaborating with local news outlets and newspapers was another form of media suggested by focus group participants.

Mailers. Another communication channel mentioned by several focus group participants was sending out informational mailers to Little Rock residents. One participant stated, “If you didn't see it in your mail, that's your fault.” This indicates that sending out mailers could be an effective way to get residents' attention and inform them about LRWRA and any reuse initiatives.

Discussion

This project was designed to determine whether a broad base of support existed for wastewater reuse in Little Rock and assess trust in the LRWRA. After conducting surveys and focus groups, we found that the vast majority of respondents were supportive of wastewater reuse and most people have a high level of trust in LRWRA. The results were largely substantiated by the literature.

Participants in surveys and focus groups were largely supportive of wastewater reuse. Our findings indicated a broad base of support across demographic characteristics for various non-potable uses. This overwhelming support across Little Rock was somewhat surprising given that the city is not facing an immediate water crisis. Residents lacked a tangible reason to embrace a significant change to the city’s wastewater system, yet they did anyway and praised the utility for being proactive. While this enthusiasm was consistent across our sample, slightly

less more varied quantitative findings emerged in regard to support for specific usage types that diverged from the literature.

Our survey findings were in conflict with the literature regarding usage types, but our focus group discussions corroborated them. While the literature cited precipitous drops in support for wastewater reuse as the probability of human contact increases, analysis of our survey's quantitative findings showed less dramatic differences in support levels across usage types (Chen, 2015; Msaki, 2022; Pathiranage, 2024). However, some focus group participants voiced strong opposition to residential uses that reflected the literature.

Disgust was a factor, but not as much of a limiting factor for support as we thought it would be per the literature, especially considering that there is no immediate need for wastewater reuse. Moreover, due to the Spaniard's rejection of wastewater reuse due to disgust, even in the face of a severe nationwide drought, we expected the yuck factor to be a more significant moderating factor for acceptance (Moya-Fernandez et al. 2021). The lack of disgust being a contingent factor was most likely related to proposed uses for wastewater reuse being purely non-potable as the literature showed that psychological repugnance is most intense when reuse involves human contact (Massoud et al., 2018).

Trust in LRWRA appeared to be a moderating factor as participants indicated that they would defer to regulatory oversight and expert scientists for information on the safety of reuse. However, survey respondents and focus group participants indicated that trust in LRWRA was conditional on transparency and clear communication. This finding was in alignment with Massoud et al. 's (2018) recommendation that utilities develop a coherent communications strategy before investing in reuse infrastructure.

Limitations

Our survey had a relatively low response rate despite our extensive recruitment efforts. Therefore, it does not provide a representative sample of LRWRA rate payers. Relatedly, our sample was fairly more educated than the population (80% had a college degree) and predominantly white (56%).

Recommendations

Using our analysis of survey responses, focus group discussions, and preexisting literature, we developed a set of recommendations that address LRWRA's goals of (1) improving public awareness and acceptance of wastewater reuse and (2) identifying best practices for communicating with Little Rock residents.

Improving Public Awareness and Acceptance Through Citizen Engagement

The first recommendation is to host civic deliberations, where members of the LRWRA Commission and administration can engage directly with the public to discuss wastewater reuse. These discussions would create an open forum for residents to voice concerns that may hinder public acceptance, while allowing LRWRA representatives to respond transparently and provide accurate information. By encouraging participants to consider multiple perspectives, regular deliberations would not only increase understanding of wastewater reuse but also strengthen familiarity with LRWRA to foster public trust.

The second recommendation is to offer in-person tours of treatment facilities. These tours would focus on educating the public by guiding participants through the treatment process, answering questions, and addressing common misconceptions. Providing a firsthand look at how wastewater is treated can help demystify the process and increase confidence in its safety and effectiveness.

The third recommendation is to expand LRWRA's social media content to include more educational and informational material such as periodic explainer videos or question and answer posts. LRWRA has already established a foundation through posts highlighting administrators, employment opportunities, and community engagement trends. Increasing the amount of informational content would make education about wastewater reuse more accessible, particularly for residents who are unable to attend in-person events such as tours or deliberations.

Communication Channels with Residents

The fourth recommendation is to distribute informational mail packets to ratepayers. These packets would serve as a direct and reliable method of educating the public by providing clear, accessible information about wastewater reuse, including how the process works, its safety, and its benefits for the community. Printed materials can reach a broad audience, including residents who may not engage with digital platforms, ensuring more equitable access to information. Additionally, thoughtfully designed packets can address common misconceptions and frequently asked questions, helping to build baseline knowledge and support informed opinions.

The fifth recommendation is to collaborate with local news outlets to produce a dedicated segment on wastewater reuse and LRWRA's role in the community. This segment would aim to both educate the public and increase familiarity with LRWRA by showcasing the treatment process, highlighting expert perspectives, and featuring interviews with staff or community stakeholders. Leveraging local news as a trusted information source can enhance credibility and reach a wide audience, ultimately strengthening public understanding and trust.

The sixth recommendation is to develop a virtual tour of a wastewater treatment facility to be featured on LRWRA's website. This virtual experience would provide an interactive and

accessible way for residents to learn about the treatment process, guiding users through each stage with visuals, narration, and clear explanations. By removing barriers such as scheduling constraints, transportation, or physical accessibility limitations, a virtual tour would make educational content available to a broader audience. Additionally, it would serve as a valuable supplement to in-person tours.

Conclusion

In assessing Little Rock residents' knowledge, attitudes, and concerns relating to non-potable wastewater reuse and their perceptions of LRWRA, we found a broad base of support. 80% of respondents indicated support for a reuse project in Little Rock, and thematic findings from focus groups and qualitative survey responses corroborate its necessity. Despite living in a water-rich state, Little Rock residents favor a proactive approach to ensuring the security of the city's water supply.

While there was widespread support for a reuse initiative, comfort levels were highest for industrial and construction uses and lowest for agricultural irrigation, which reflected findings in the literature that acceptance dwindles as the perceived chances of contact with reuse increase. In regards to procedural specifics, participants reported little knowledge of the process, but trusted regulators, scientific experts, and LRWRA to effectively construct and manage a reuse system. While concerns about health and safety are still active in the public consciousness, our results indicated that they do not significantly affect the level of support. Our data and analysis indicated that this is likely due to the proposed applications of reuse, which are wholly non-potable.

In order to maintain the high baseline level of support indicated by our study sample, LRWRA should diligently adhere to survey and focus group participants' call for transparency and clear communication. Investing in outreach such as civic deliberations, facility tours, and

targeted communication campaigns through print, social media, and other digital platforms to proactively build awareness will help sustain the social license necessary to move forward with reuse projects.

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Appendix A

Little Rock Water Reclamation Authority and Wastewater Reuse Perception Survey

INFORMED CONSENT

Thank you for participating in our study! Researchers at the University of Arkansas Clinton School of Public Service have been asked by the Little Rock Water Reclamation Authority (LRWRA) to investigate Little Rock's perceptions of wastewater reuse and the utility. The information gathered will help LRWRA begin efforts to develop wastewater reuse infrastructure and more sustainability efforts.

Completing this survey will take about 10 minutes. We will ask questions to learn about Little Rock residents' attitudes, knowledge, and concerns about wastewater reuse and their understanding of the Little Rock Water Reclamation Authority utility. Your participation in the research is completely voluntary and may be stopped at any time. You may skip any question you do not want to answer and end the survey at any time. Your answers will be kept confidential to the extent allowable by law and university policy. Participants must be at least 18 years old.

There are no risks anticipated with this project, other than those associated with daily life. The potential benefits are shedding light on Little Rock residents' perceptions of wastewater reuse and the LRWRA utility to facilitate sustainability efforts in the city. Participants will be eligible for a chance to win a $25 gift card. Your name will not be included anywhere in our final report.

If you have questions or concerns about this study, you may contact the principal investigator Dr. Nichola Driver at 501-683-5215 or nddriver@clintonschool.uasys.edu For questions or concerns about your rights as a research participant, please contact Ro Windwalker, the University's IRB Coordinator, at (479) 575-2208 or by e-mail at irb@uark.edu.

1. I understand that participation in this study is voluntary and refusing to participate will not adversely affect my relationship or reputation with any organization.
2. I understand that all data collected will be kept confidential to the extent allowed by law and the University of Arkansas' policy.

If you understand the statements above and freely consent to participate in the study, click on the "I Agree" button to begin the survey.

☐ I Agree

☐ I Disagree

Are you a Little Rock resident?

☐ Yes

☐ No

Are you 18 years of age or older

☐ Yes

☐ No

Q3.

First, we would like to ask what you already know about the phrase "wastewater reuse."

How familiar are you with the concept of "wastewater reuse" for city utilities?

☐ Not at all familiar

☐ Slightly familiar

☐ Moderately familiar

☐ Very familiar

☐ Extremely familiar

In your own words, briefly define wastewater reuse.

_____

Q4.

Wastewater Reuse Attitude

Now, we'd like to ask your opinions about wastewater reuse for the City of Little Rock.

1. Please rate how comfortable you are with the use of treated wastewater for the following purpose (with 1 being most comfortable and 5 being not comfortable at all):
    a. __ **Landscape irrigation**: For example parks, golf courses, medians, and green roofs
    b. __ **Industrial uses**: For example cooling towers, boiler feed, manufacturing
    c. __ **Commercial & residential buildings**: For example toilet flushing, HVAC systems, decorative fountains

d. __ **Agricultural irrigation**: For example non-food crops or restricted food crops with proper safeguards

e. __ **Construction & dust control**: For example reuse water for site preparation and road maintenance

2. Review each of these situations. Would wastewater reuse be acceptable to use during this situation?

   a. When there is a drought

      ☐ Yes

      ☐ Maybe

      ☐ No

   b. To increase economic growth

      ☐ Yes

      ☐ Maybe

      ☐ No

   c. When water costs are too high

      ☐ Yes

      ☐ Maybe

      ☐ No

   d. Losing too much drinking-quality water to non-potable uses

      ☐ Yes

      ☐ Maybe

      ☐ No

   e. When it is better for the environment

- ☐ Yes
- ☐ Maybe
- ☐ No

non-potable wastewater reuse refers to the use of treated wastewater for purposes other than drinking—such as irrigation, industrial processes, toilet flushing, and cooling systems.

3. What is your level of support for wastewater reuse in Little Rock?

f. Strongly oppose

g. Somewhat oppose

h. Neither oppose nor support

i. Somewhat support

j. Strongly support

Q5.

Wastewater Reuse Concern

1. What concerns might you have about wastewater reuse? Please describe them below.

_____

Q6.

We are also interested in what our residents know about the Little Rock Water Reclamation Authority. Now we're going to ask you some questions about your knowledge of the Little Rock Water Reclamation Authority.

1. Which of the following best describes the role of the Little Rock Water Reclamation Authority?

- ☐ Provides drinking water to homes and businesses
- ☐ Treats and manages wastewater/sewage

- ☐ Collects rainwater
- ☐ I don't know

2. Please indicate how familiar you are with the wastewater treatment process
   - ☐ Not at all familiar
   - ☐ Slightly familiar
   - ☐ Moderately familiar
   - ☐ Very familiar
   - ☐ Extremely familiar
3. After the Little Rock Water Reclamation Authority treats wastewater to meet state and federal safety standards, where does it go?
   - ☐ It's released into Lake Maumelle
   - ☐ It's stored on site
   - ☐ It's sent to be treated further by a drinking water facility
   - ☐ It's released into the Arkansas River
   - ☐ It's pumped underground
   - ☐ I don't know

Q7.

Little Rock Water Reclamation Authority Attitudes and Trust

The mission of Little Rock Water Reclamation Authority is to serve our community by protecting public health and the environment while leading the industry by reclaiming water for a more sustainable tomorrow.

1. How much do you agree or disagree with this statement: Little Rock Water Reclamation Authority provides services that are in the best interest of the community.

   a. Strongly disagree
   b. Somewhat disagree
   c. Neither disagree nor agree
   d. Somewhat agree
   e. Strongly agree

2. How would you describe your perception of the Little Rock Water Reclamation Authority?
   a. Very positive
   b. Somewhat positive
   c. Neither positive nor negative
   d. Somewhat negative
   e. Very negative
3. How much do you trust the Little Rock Water Reclamation Authority to manage wastewater safely and responsibly?
   a. Strongly trust
   b. Somewhat trust
   c. Neither trust nor distrust
   d. Somewhat distrust
   e. Strongly distrust

Q8.

Demographic information

Gender (Please Select)

☐ Male

- ☐ Female
- ☐ Non-binary
- ☐ Other (Fill in option)
- ☐ Prefer not to answer

Age

- ☐ 18 - 24
- ☐ 25 - 34
- ☐ 35 - 44
- ☐ 45 - 54
- ☐ 55 - 64
- ☐ 65 or older
- ☐ Prefer not to answer

Which of the following best describes you?

- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Black or African American
- ☐ Hispanic or Latino
- ☐ Middle Eastern or North African
- ☐ Native Hawaiian or Pacific Islander
- ☐ White
- ☐ Prefer not to answer

What is the highest degree or level of education you have completed?

- ☐ Some high school
- ☐ High school
- ☐ GED or equivalent credential
- ☐ Some college
- ☐ Associate's degree
- ☐ Bachelor's degree
- ☐ Master's degree
- ☐ Professional degree beyond Bachelor's (for example: MD, DDS, DVM, LLB, JD)
- ☐ Doctorate degree (for example: PhD, EdD)
- ☐ Prefer not to answer

What is your zipcode?

_____

Would you like to be entered into a raffle to win a $25 gift card

- ☐ Yes
- ☐ No

-> If Yes, Please provide an email or phone number to be entered. Once the survey is closed, winners will be randomly selected and contacted.

_____

Would you like to participate in a compensated, in-person focus group to further discuss your knowledge, attitudes, and concerns towards wastewater reuse and the Little Rock Water Reclamation Authority? Each focus group participant will receive a $50 gift card.

- ☐ Yes
- ☐ No

IF YES, PARTICIPANT SENT TO SEPARATE QUALTRICS SURVEY

END

Thank you for taking your time to complete this survey. You may now exit the survey.

Appendix B
LRWRA Focus Group Moderator Guide

Thank you all for taking the time to meet with me (or us) today to discuss wastewater reuse and the Little Rock Water Reclamation Authority. My (our) name(s) is (are) _____, and I (we) am (are) working with LRWRA and interested in learning more about how Little Rock residents feel and understand wastewater reuse and the work that LRWRA does as a utility.

Your participation will help us better understand Little Rock residents' experiences, ideas, knowledge, concerns, and attitudes regarding wastewater reuse and LRWRA. Everything said today will be recorded, but these recordings will be transcribed without any identifying information, so nothing is connected to you individually. The focus group may take about one hour [review informed consent form]. At the end of this focus group, you will receive a $50 gift card. Before we begin, do you have any questions?

This conversation will utilize the six conversation guides as developed by Living Room Conversations

- **Show respect and suspend judgment.** People tend to judge one another. Setting judgment aside opens you up to learning from others and makes them feel respected and appreciated.
- **Be authentic and welcome that from others.** Share what's important to you. Speak from your experience. Be considerate of others who are doing the same.
- **Be purposeful and to the point.** Do your best to keep your comments concise and relevant to the question you are answering. Be conscious of sharing speaking time with other participants.
- **Own and guide the conversation.** Take responsibility for the quality of your participation and the conversation. Be proactive in getting yourself and others back on

track if needed. Use an agreed-upon signal (like the “time out” sign) if you feel the agreements are not being honored.

Domain	**Prompt Question**	**Clarifying questions/Probes**	**Time/Notes**
Building Rapport	What is your motivation for being here today? Can anyone tell me what wastewater is? When you hear the term “wastewater reuse” what comes to mind?		
Knowledge about LRWRA role	Who has heard of LRWRA? What have you heard? Can anyone describe what LRWRA does for the community? How do you think wastewater is treated in our community?	What steps do you think are part of that process?	
Attitudes about LRWRA	How well do you think LRWRA operates as a utility?	How confident are you that LRWRA could handle wastewater reuse safely? What experiences make you feel that way?	
Knowledge about wastewater reuse	What do you think wastewater reuse means? Do you have previous experiences with wastewater reuse in a community outside of Little Rock?	Can you describe any examples of wastewater reuse you’ve seen or heard about?	

	[after this, we will explain wastewater reuse]		
Concerns about wastewater reuse	Are there any "gut reactions" or feelings you have when you hear about wastewater reuse? If LRWRA proposed a wastewater reuse project, how likely would you be to support it? Are there settings that you believe reused wastewater should *not* be used? Why?	Where do you believe your gut reactions come from? (media, experiences, "common sense") What would make you more or less supportive of different uses? How would your comfort level change if you knew more about the treatment process for reused wastewater?	
Attitudes about wastewater reuse	What do you believe are the benefits of wastewater reuse? What wastewater reuse options are you most comfortable with? Give a list of examples and ask, "of these options, which are you most supportive of or most comfortable with and why?"	What do you think could be done to help reduce discomfort? If you could decide, what would you like wastewater reuse to look like in Little Rock?	
Closing	What is one message from our discussion that you hope decision-makers take to heart regarding our discussion around wastewater reuse?	Based on what we have heard from the group, what is one issue that everyone believes decision-makers should focus on regarding wastewater reuse in Little Rock?	
Community Engagement	What's the best way for LRWRA to share updates or educate the public about wastewater reuse?	How should LRWRA involve residents in future discussions about wastewater reuse?	

5 Minute Overview from LRWRA about the utility

Closing Statements: Thank you all for your time and insights. Our conversation will be very helpful for us to better understand the people of Little Rock's thoughts and feelings regarding wastewater reuse.

Appendix C

Research Study Evaluation Table

Evaluation Question	Indicators/Performance Measures	Potential Data Source
What are the attitudes, knowledge, and concerns about wastewater reuse among LRWRA ratepayers?	% of survey respondents who find wastewater reuse acceptable or very acceptable Major themes of trust/distrust towards wastewater reuse Major concerns about safety or quality of wastewater reuse Amount of support for wastewater reuse in various non-potable scenarios (Likert scale, multiple choice) Frequency of mentions about sensory concerns or "yuck" factor statements % of participants who think wastewater reuse is beneficial for Little Rock	Survey of participants Focus Groups
What is the general understanding of the local wastewater utility among LRWRA ratepayers?	% of participants who know of LRWRA % of participants who correctly identify the steps of wastewater reclamation % of participants who correctly identify where treated wastewater is deposited Participants' ability to explain wastewater treatment steps Frequency of positive and/or negative attitudes toward wastewater reuse Mean trust score in LRWRA (Likert scale)	Survey of participants Focus Groups