

Options for Clean Water Solutions in Mound Bayou and Dunlap, Mississippi



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Mound Bayou and Dunlap’s Options for Clean Water Solutions

Mound Bayou is a city in Bolivar County, Mississippi, with approximately 1,500 residents. The city is located along Highway 61, in the central Mississippi Delta. Mound Bayou is a historic community that was founded by emancipated enslaved people in 1887, the first city of its kind.

Dunlap, Mississippi, is an unincorporated community of 34 homes adjacent to Mound Bayou. Mound Bayou’s drinking water system currently serves the homes in Dunlap. However, the residents of Dunlap are not connected to Mound Bayou’s sewer system and treat their wastewater onsite. The residents of Dunlap currently have inadequate wastewater treatment services.

With the passage of the Bipartisan Infrastructure Law and new Water Technical Assistance services, there is momentum to bring wastewater treatment solutions to homes in Dunlap. This plan describes technical options and financial resources for wastewater treatment. It is the product of the combined efforts of many organizations and individuals and provides options for clean water solutions for the community.

Closing America’s Wastewater Access Gap Community Initiative Pilot: EPA/USDA-RD Partnership

Introduction

The U.S. Environmental Protection Agency (EPA) and the U.S. Department of Agriculture Rural Development (USDA-RD) partnered with six states and three Tribes (two federally recognized and one state-recognized) on the Closing America’s Wastewater Access Gap Community Initiative. As a pilot program, this initiative was the first of its kind for EPA and USDA-RD. This initiative provides technical assistance to support capacity to improve wastewater management for the 11 participating communities. EPA and USDA have grant and loan programs to help pay for wastewater system improvements. Recent increases in federal funding offer an opportunity for communities to invest in septic upgrades, connect to nearby treatment systems, or build new sewer and wastewater treatment systems that meet their needs.

EPA offers a range of Water Technical Assistance (WaterTA) for communities to identify water challenges and solutions, build capacity, and develop application materials to access water infrastructure funding. EPA collaborates with states, Tribes, territories, community partners, and other stakeholders to implement WaterTA efforts. The result: more communities apply for federal funding to have quality water infrastructure and reliable water services. Communities can learn more about EPA WaterTA and how to indicate interest in receiving assistance by visiting EPA’s WaterTA website.¹

USDA offers a wide range of water and wastewater assistance for rural communities to obtain the technical assistance and financing necessary to develop drinking water and waste disposal systems. USDA’s Water and Waste Disposal Technical Assistance and Training Grants program helps qualified, private nonprofits provide technical assistance and training to identify and evaluate solutions to water and waste problems. It also helps applicants prepare applications for water and waste disposal loans and grants, and it helps associations improve the operations and maintenance (O&M) of water and waste facilities in eligible rural areas with populations of 10,000 or fewer. Communities can learn more about USDA Water and Waste Disposal Technical Assistance and Training Grants and how to indicate interest in receiving assistance by visiting USDA’s website.²

Purpose

EPA and USDA-RD pilot program staff members worked with the pilot program team—the Mayor of Mound Bayou; the local engineering consultant, Cook Coggin Engineers; Bolivar County; USDA-RD state leadership; the local technical assistance provider, Communities Unlimited; the Mississippi Department of Environmental Quality (MDEQ); and the Mississippi State Department of Health (MSDH)—to develop solutions for Mound Bayou’s wastewater issues. This document, *Options for Clean Water Solutions for Mound Bayou and Dunlap, Mississippi*, outlines potential solutions to address the needs for improved wastewater treatment approaches for Dunlap. Residents and Mound Bayou leadership can use this information to estimate costs and select a wastewater solution that meets today’s challenges and helps the community thrive.

Over the past year, the pilot program team has:

1. **Conducted a community wastewater assessment.** The pilot program team reviewed existing information on wastewater systems in Mound Bayou and Dunlap and found areas that need improvement. The assessment also included a site visit in conjunction with county and state staff to evaluate existing site conditions and onsite systems.

1 www.epa.gov/waterta

2 www.rd.usda.gov/programs-services/water-environmental-programs/water-waste-disposal-technical-assistance-training-grants

2. **Identified wastewater solutions.** The team identified wastewater solutions and estimated their costs. They considered the community's long-term needs and outlined a path to apply for funding. State and local officials and community members played a key role in developing these options.
3. **Helped communities find and apply for funding opportunities.** This plan outlines federal funding sources and how to apply for funding. It also shows how to pay for construction and long-term costs. Funding applications are being prepared to support planning and design efforts for the selected option.
4. **Developed a plan to pay for ongoing costs.** To install and operate the selected system, the City of Mound Bayou will have to develop a plan to pay for ongoing costs. These costs include management, operations, maintenance, and any potential construction loan repayments. This plan offers ideas to get started, such as programs with low-income rate assistance and non-rate revenue programs that other utilities have used.



The Mound Bayou Board of Aldermen has for years been looking to give any type of relief to the citizens of Dunlap. There are families who are forced to live in unsafe environments. Children who play basketball near failing septic tanks. This project provides a ray of hope to the communities of Dunlap and Mound Bayou.

—Mound Bayou Alderwoman Beverly Johnson

The Dunlap Community and the City of Mound Bayou, Mississippi

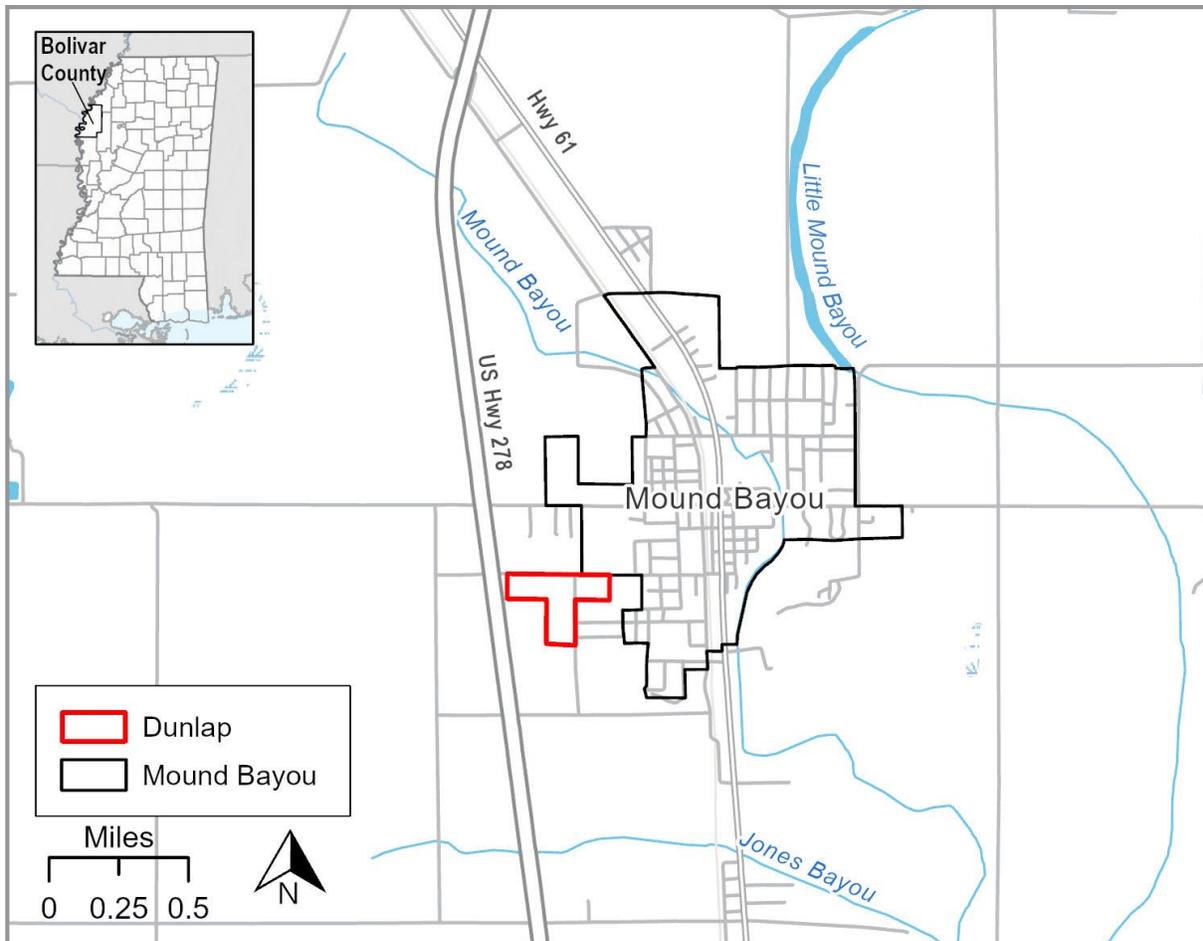


Figure 1. Location of Dunlap community, Mississippi.

The City of Mound Bayou in Bolivar County, Mississippi, is located along Highway 61, in the central Mississippi Delta. The city was founded as an independent Black community in 1887 by emancipated enslaved people. Its historic district is listed on the National Register of Historic Places. Mound Bayou, nicknamed by its residents the “Jewel of the Delta,” experienced significant economic prosperity and was a destination for many people living in the Mississippi Delta. After a period of decline in the 1920s and 1930s, Mound Bayou continued to draw Black businesses and was home to a large hospital up until the Civil Rights Movement in the 1960s. Today, the population is approximately 1,500, a decrease from its historical peak of 2,917 residents in 1980 (U.S. Decennial Census). Mound Bayou operates its own public services, including

City of Mound Bayou Utilities Fast Facts:

- Population: 1,534 (2020 Census)
- Median household income: \$20,833
- Current drinking water customers: 650
- Current monthly drinking water bill (flat rate/in city limits): \$16
- Current wastewater customers: 548
- Current average residential wastewater flow: 5,500 gallons per month per residence
- Current monthly wastewater bill (flat rate/in city limits): \$8.50

a successful water and wastewater utility. Adjacent to the incorporated City of Mound Bayou is an unincorporated area of Bolivar County known as the “Dunlap community” (Figure 1, Location of Dunlap community, Mississippi). The aim of this report is to provide options for alleviating wastewater issues in Dunlap.

The Dunlap community’s population is estimated to be between 50 and 75 residents who live in roughly 34 homes. The City of Mound Bayou provides water service to the Dunlap community but not sewer service; however, Mound Bayou’s sewer collection mains serve lots directly adjacent to lots in the Dunlap community (Figure 2, Relevant features of Dunlap and Mound Bayou). During a site visit to Dunlap in February 2023, the pilot program team noted numerous lots with failing onsite systems and raw or partially treated sewage that ponded on private properties. Ponding of raw or inadequately treated sewage near occupied dwellings creates a major health risk.

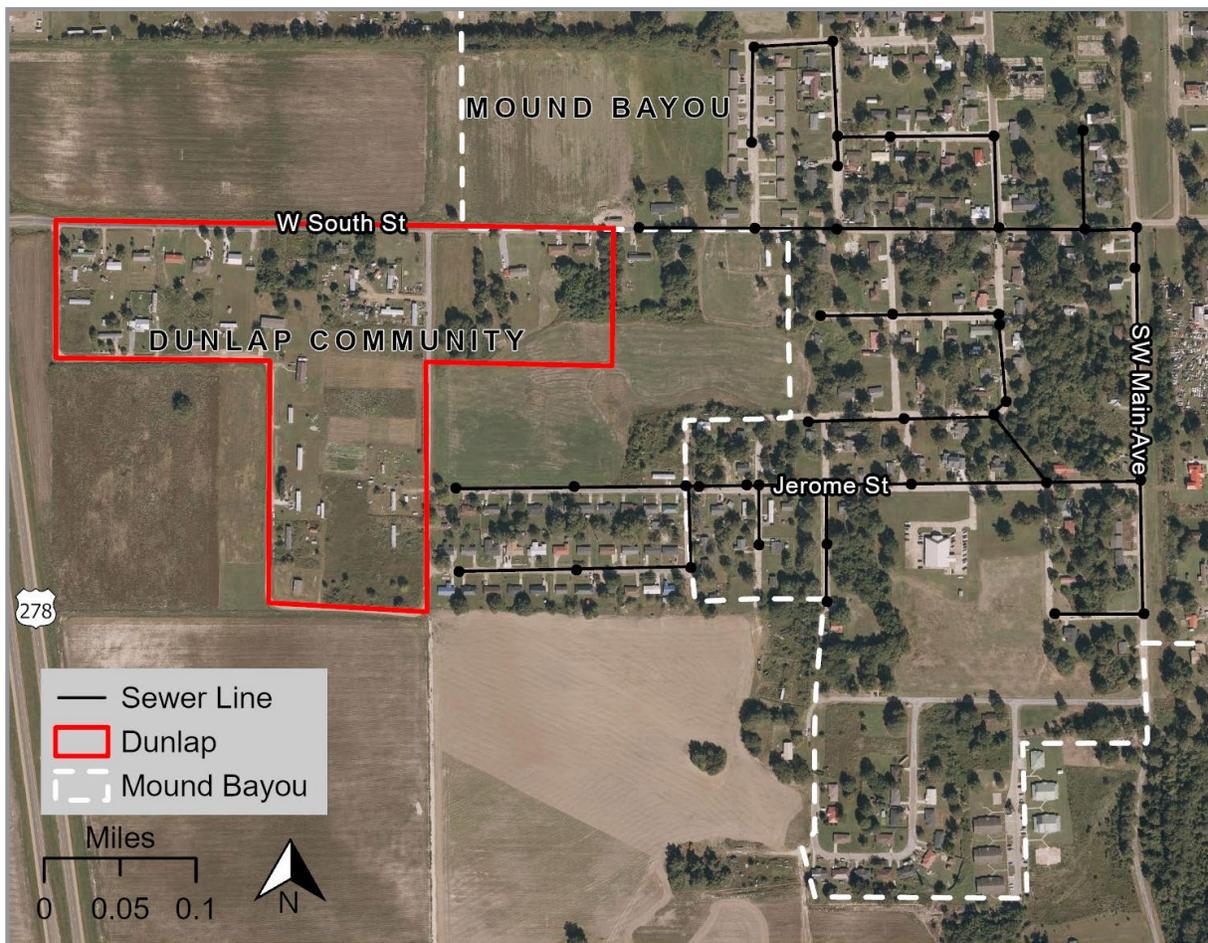


Figure 2. Relevant features of Dunlap and Mound Bayou (replica of original image provided by Eley McPherson Engineering).



The citizens of Mound Bayou would like to see a quick and affordable solution for the community. There are many vacant lots in Dunlap that we would like to build on.

—Citizen quote from listening session in Mound Bayou, August 2023

The Potential of Infrastructure Investment

A collaboration between Mound Bayou and Bolivar County has produced a plan to remedy the public health issues present in Dunlap and provide the residents with adequate and sustainable sanitation services. Mound Bayou's elected officials have proposed to extend the city's centralized wastewater system to service the Dunlap community. This opportunity, presented by the pilot initiative and fostered by the willingness and participation of local leaders, delivers what Mound Bayou Alderwoman Beverly Johnson described as "a ray of hope for the community."

Community Engagement Feedback

The Mound Bayou Board of Aldermen and EPA held a public meeting in August 2023 to present the alternative solutions for the Dunlap community. The presentation included all cost estimates associated with the two sanitation service options described below, and both board members and community residents posed questions to the project team. Major points shared during the meeting include:

- The community would like to see construction start as soon as possible. In addition to removing ponding sewage from several of the Dunlap homes, community members would like to be able to construct on the vacant lots.
- Rate affordability is key to maintaining and growing community support. The community members would like to see a 100 percent grant funding scenario for any option.
- A connection fee would help Mound Bayou with future costs as needed, especially if properties are developed and connected to the centralized sewer system after it is completed.

At the meeting, the Mound Bayou board issued a unanimous approval for engineering firm Cook Coggin to proceed with all funding applications for the central sewer expansion alternative.

Wastewater Treatment Options for the Dunlap Community

The project team evaluated two options for providing safe and reliable sanitation services to the Dunlap community:

1. Provide centralized sewer service to the Dunlap community, connecting to the Mound Bayou wastewater system.
2. Replace failed or partially constructed onsite systems with new, properly permitted advanced treatment units to meet MSDH regulations.

Under Option 1, the City of Mound Bayou's National Pollutant Discharge Elimination System (NPDES) permit would be the legal vehicle for permitting new wastewater service to the Dunlap community. It is important to note that under Option 2, the permitting agency would be MSDH, since Bolivar County has not adopted an ordinance regulating the permitting of onsite wastewater systems.

Costs developed for each alternative include engineering, design, permitting, legal services, and easements, along with compliance with state and federal funding agency requirements (e.g., Davis Bacon prevailing wages paid for all construction work; all materials complying with American Iron and Steel and Build America, Buy America requirements). The section below shows the wastewater system costs, estimated capital costs, estimated operating costs, and pros and cons for each option. Table 1 provides a summary and comparison of the two options.

The project team included possible interim solutions to address the current and ongoing issue of raw sewage discharging onto the ground until the final solution is constructed. Even when expedited, it takes time to fund, procure, permit, and construct new wastewater infrastructure. Either of the two options described below will require a minimum of 36 months to implement, during which time residents of the Dunlap community will continue to be exposed to significant human health risks unless interim abatement steps are taken. An example interim abatement strategy implemented by another county is described in Appendix A.

Option 1: New Centralized System and Connection to Mound Bayou Existing System

This option provides centralized sewer services for approximately 34 existing individual residences. The City of Mound Bayou has agreed in principle to provide sewer services to this area. Once Mound Bayou completes key upgrades to the lagoons and lift station, it will have the capacity to serve the Dunlap area. This option consists of the following:

- Approximately 6,000 feet of 8-inch sewer collection mains.
- One new lift station and 4-inch force main (length to be determined), discharging into existing Mound Bayou sewer manhole.
- New sewer service laterals from the sewer main to within 5 feet of existing dwellings.
- Abandonment of existing onsite systems.
- Reclamation of contaminated areas (including removing contaminated soils and placing clean topsoil).
- Acquisition and recording of permanent easements in the existing roadway for the sewer line, along with acquisition and recording of an easement for the lift station.

Expected capital cost range: \$2 million to \$3 million.

Expected monthly O&M costs per customer (does not include loan repayment; see Table 2 for cost per customer): \$15 (current O&M rate charged by Mound Bayou for customers outside city limits).

Pros:

- Eliminates the current public health concern about surfacing raw or partially treated wastewater on properties.
- Provides a long-term solution to the failed onsite systems within Dunlap.
- Mound Bayou has the staff and governmental oversight structure to provide centralized collection system O&M.
- Adding customers to the Mound Bayou system provides for better economies of scale, with more customers sharing the cost of infrastructure O&M and upgrades.

Cons:

- The \$15 rate per month (or higher) may pose a financial challenge to some Dunlap community members.

Option 2: Replacement of Onsite Systems and Establishment or Enhancement of Wastewater Oversight Authority

This option replaces all failed onsite systems or partially constructed onsite systems with new, advanced treatment units that account for the soils and groundwater conditions of the area. All onsite systems must meet MSDH design regulations, as Bolivar County does not have a local ordinance regulating onsite wastewater systems. For this option, 30 existing lots are assumed to need new advanced onsite treatment units since the existing systems in the Dunlap community either have failed (i.e., effluent is surfacing) or are only partially constructed systems. To ensure new onsite systems would establish a permanent, properly maintained wastewater treatment system, this option assumes a Responsible Management Entity (RME) will be created and/or identified, potentially within existing local governments. The RME could apply for and receive funding, oversee construction, and then provide ongoing oversight and maintenance of all installed systems. There are associated costs to ensuring a sufficient oversight authority, such as the RME purchasing a septic tank pumper truck and establishing easements or rights of entry on each property to allow access for maintenance and repairs. Alternatively, to achieve management at a lower cost, the RME could contract with a nearby septic tank installation and pumping company for all maintenance activities.

Expected capital cost range: \$1 million to \$1.5 million.

Expected monthly O&M costs per customer (does not include loan repayment; see Table 2 for cost per customer):

Monthly operational costs are assumed to be approximately \$50 per month per home for advanced treatment units and could include some or all of the following activities, depending on the system installed:

- Tank pump-out as often as every 2 years.
- Routine service and maintenance every 6 months.
- Pump replacement every 5 years.
- Blower replacement every 5 years.
- Filter replacement every 2 years.
- Floats and control parts replacement every 5 years.
- Monthly electrical costs to support mechanical treatment (i.e., pumps, blowers, and controls).

Pros:

Cons:

- Eliminates the current public health concern of surfacing raw or partially treated wastewater on properties.
- Provides a long-term solution to the failed onsite systems within Dunlap.
- Bolivar County may need to adopt onsite wastewater system regulations or implement a process for ensuring the state has issued its final onsite permit prior to allowing residents to occupy their homes.
- The wastewater management authority must be enhanced, or a new organization created.
- If a loan is assumed for this project, the loan repayment costs are the responsibility of the Dunlap community members.

Table 1. Comparison of Wastewater Treatment Options

	Option 1	Option 2
Estimated capital cost range	\$2 million–\$3 million	\$1 million–\$1.5 million
Monthly O&M cost per home	\$15 ^a	\$50 ^a
Eliminates the current public health concern	Yes	Yes
Provides a long-term solution	Yes	Yes
Requires new local sewer management authority	No	Yes
Includes existing local sewer management authority	Yes	No

^a Approximate costs, dependent on results of a rate study and potential loan repayments. See Table 2 for potential loan repayment costs for each option.

Financing Options

Table 2 provides estimated monthly costs to residents within the Dunlap community assuming three funding scenarios for the two sewer alternatives considered:

- The entire project receives funding in the form of a grant or forgivable loan, resulting in no loan repayment for Dunlap community residents.
- The project receives an 80 percent forgivable loan, and the remaining project costs are financed over 30 years with a 1.8 percent annual interest rate, which is the current MDEQ Water Pollution Control Revolving Loan Fund (WPCRLF) rate. For Option 1, the loan is repaid by the 548 existing customers plus the 34 developed lots in Dunlap, for a total of 582 customers. For Option 2, the loan is repaid by the 34 existing Dunlap customers.
- The project is eligible to receive up to a 75 percent grant based on the median household income (MHI) and a

financial analysis, and the remaining project costs are financed up to 35 years with the current annual poverty interest rate of 2.375 percent (with interest rate changes quarterly). These funding terms are offered by USDA-RD through the Water and Waste Disposal Loan & Grant Program. Although USDA-RD can offer a loan repayment term of 40 years, Mississippi state law limits the loan repayment term to 35 years for municipalities. For Option 1, the loan is repaid by the 548 existing customers plus the 34 developed lots in Dunlap, for a total of 582 customers. For Option 2, the loan is repaid by the 34 existing Dunlap customers.

The monthly O&M cost shown in Table 2 is the existing rate assessed by Mound Bayou to residents outside city limits of \$15 per month.

Two important considerations are reflected in the cost of Option 2. Option 2 assumes a new local government agency or sewer authority is created to apply for and receive funding for this project. The monthly O&M cost for the onsite system alternative assumes an average monthly cost of \$50 per month and all installed systems are advanced treatment units. This monthly fee is more than the anticipated monthly O&M for a centralized sewer because the costs are spread over a small population of 34 homes in Dunlap versus shared with Dunlap and Mound Bayou residents for the centralized sewer.

Table 2. Estimated Monthly Costs for Centralized Sewer for the Dunlap Community in Bolivar County, Mississippi

Funding Scenario	Total Loan Amount	Monthly Loan Payment per Residential Customer	Monthly O&M per Residential Customer (Dunlap Customers)	Estimated Monthly Cost per Residential Customer (Loan Repayment plus O&M)
Option 1: Centralized Sewer; Capital Cost of \$2 Million to \$3 Million				
All grant or forgivable loan	\$0	\$0	\$15 ^d	\$15
MDEQ WPCRLF funding ^a	\$0.4 million to \$0.6 million	\$3 to \$4 ^c	\$15 ^d	\$18 to \$19
USDA-RD funding ^b	\$0.5 million to \$0.75 million	\$3 to \$4 ^c	\$15 ^d	\$18 to \$19
Option 2: Onsite Systems; Capital Cost of \$1 Million to \$1.5 Million				
All grant or forgivable loan	\$0	\$0	\$50 ^f	\$50
MDEQ WPCRLF funding ^a	\$0.2 million to \$0.3 million	\$21 to \$32 ^e	\$50 ^f	\$71 to \$82
USDA-RD funding ^b	\$0.25 million to \$0.375 million	\$23 to \$35 ^e	\$50 ^f	\$73 to \$85

^a Assumes 80 percent of total project cost is funded with a grant or forgivable loan and the remainder is funded with a loan. Also assumes a 1.8 percent annual interest rate and 30-year loan term (current MDEQ WPCRLF funding terms).

^b Assumes 75 percent of the total project cost is funded with a grant and the remainder is funded with a loan. Also assumes the current annual poverty interest rate of 2.375 percent (with interest rate changes quarterly) and a loan repayment period of 35 years.

- ° Assumes existing Mound Bayou customers (548) plus Dunlap customers (34) for a total of 582 customers repay the loan.
- ° Assumes the current monthly rate of \$15 for residents outside Mound Bayou city limits.
- ° Assumes 34 homes in Dunlap repay the loan.
- ° Assumes a monthly fee assessed by the newly created sewer authority is approximately \$50 per month for O&M of onsite advanced treatment units.

Interim Public Health Risk Abatement Measures

Providing funds to temporarily abate the ponding sewage near homes would achieve important public health and environmental benefits until the permanent solution is constructed. Based on current project status, it could be at least 3 years before a permanent solution is installed and functioning. Proposed interim measures include replacing leaking septic tanks that will function as holding tanks, converting existing septic tanks that do not currently discharge to an approved disposal area into holding tanks, and conducting routine tank pumping.

The estimated cost for interim measures is \$100,000. Both MDEQ WPCRLF and USDA-RD are limited in their ability to fund interim or temporary solutions, and another source of funding is needed to finance the temporary measures. Communities Unlimited can assist the community with exploring options to fund these measures, including working with philanthropic organizations and regional banks.

Water System Improvements for Dunlap

The Dunlap community receives water from Mound Bayou through a 2-inch glued PVC water line. Much of this water line is located behind homes within a utility easement. The water line suffered multiple breaks during a cold spell in January 2023 due to a lack of sufficient insulation and the joints being glued together. Some locations of the broken water line are directly adjacent to areas of ponding sewage, creating a public health concern with sewage contaminating the water supply (see Figures 3 and 4). Additionally, the water line suffered a major break in September 2023 due to human error, which resulted in many homes going without water for an extended period. The Mayor of Mound Bayou requested the water line replacement project be prioritized. The estimated cost for the project is \$2 million to \$2.5 million and includes the following:

- A new 8-inch water main with hydrants and valves.
- New service connections to the existing 34 developed lots from the main to within 5 feet of the existing house, plus a new meter.
- New service connections to the 16 platted lots from the main to the property line.
- Easements for a new water main in Dunlap and Trotter Roads (currently, no roadway and utility easements exist in these roads).



Figures 3 and 4. Exposed water lines in Dunlap.

Funding Opportunities

The Bipartisan Infrastructure Law provides additional funding to the Clean Water State Revolving Fund (CWSRF) for loans and grants to small, rural, and disadvantaged communities that can be leveraged with USDA-RD funds to address inadequate water and wastewater systems. There are multiple potential funding sources for Mound Bayou, including USDA-RD funds and the CWSRF administered by MDEQ, referred to as WPCRLF.

Overview of the CWSRF Program Administered by MDEQ

- The MDEQ WPCRLF is a low-interest loan program intended to finance public infrastructure improvements.
- Communities that qualify for subsidy are eligible to receive principal forgiveness loans. Eligibility for subsidy is generally based on the MHI. MDEQ WPCRLF deems projects eligible for subsidy if the project area population is 4,000 people or fewer and the MHI is \$40,000 or less. Additional prioritization is given based on other economic factors, such as unemployment rate.
- Per the affordability criteria outlined in MDEQ's WPCRLF Fiscal Year 2023 Intended Use Plan, Mound Bayou and the Dunlap community within Bolivar County both would qualify for subsidy.³
- MDEQ WPCRLF issues its Intended Use Plan each year, describing how funds will be made available through the WPCRLF program to support infrastructure projects and current year priorities.
- Funding applications are accepted year-round, but to receive priority status for current year construction funds, communities should submit applications prior to September of the year when they want to be listed on the Intended Use Plan. A completed facility plan and public notices for all associated meetings are required to be eligible to receive a funding agreement.
- For communities receiving loans, the term is generally 20 years with an interest rate of 0.8 percent. Historically marginalized communities can qualify for a 30-year loan term with an interest rate of 1.8 percent. The interest rates are the current rates available and are subject to change each year.
- The MDEQ WPCRLF will fund up to 80 percent of the project cost as principal forgiveness, with the total principal forgiveness per project capped at \$4 million.
- The MDEQ WPCRLF will cover legal and other costs associated with obtaining an easement or right-of-way, such as legal and surveying costs, but will not pay for purchasing land.

Overview of USDA-RD's Water and Environmental Programs: Water and Waste Disposal Loans and Grants

- Through Rural Utilities Service Water and Environmental Programs, rural communities obtain the technical assistance and financing necessary to develop drinking water and waste disposal systems.
- USDA-RD has long-term, low-interest loan financing programs to assist communities with infrastructure costs. There are opportunities for grants combined with loans for communities that qualify.
- Eligibility for funding is based on the MHI and population of the community.
- Mound Bayou would be considered for other USDA-RD programs such as Persistent Poverty assistance, which can provide a higher percentage of grant funds.
- USDA-RD loans and grants require financial audits, as well as a commitment to revenue collection during the life of the loan.
- For communities receiving loans, the loan term can be up to 40 years based on the expected life of the system. However, the loan term for municipalities in Mississippi is limited to 35 years based on state law.
- The interest rate is adjusted quarterly.

³ https://www.mdeg.ms.gov/wp-content/uploads/2023/08/FY23IUP_Final.pdf

- USDA-RD accepts applications year-round on a rolling basis through RD Apply.⁴
- More information is available on USDA's website.⁵

Special Evaluation Assistance for Rural Communities and Households (SEARCH) Grant

- The SEARCH grant program helps very small, financially distressed rural communities with predevelopment feasibility studies, design, and technical assistance on proposed water and waste disposal projects.
- State and local government entities, nonprofits, and federally recognized Tribes may apply.
- The area to be served must be rural, with a population of 2,500 or fewer, and have an MHI below the poverty line or less than 80 percent of the statewide MHI.
- Applications are accepted year-round through RD Apply.⁴

Water and Waste Disposal Predevelopment Planning Grants

- The Predevelopment Planning Grants program helps eligible low-income communities plan and develop applications for proposed USDA-RD water or waste disposal projects.
- State and local government entities, nonprofits, and federally recognized Tribes may apply.
- The area to be served must be rural, with a population of 10,000 or fewer, and have an MHI below the poverty line or less than 80 percent of the statewide MHI.

Benefits of Investing in Adequate Wastewater Infrastructure

Public and Community Health Improvement

Exposure to sewage can have negative health impacts and spread diseases such as salmonellosis, shigellosis, cholera, giardiasis, amoebiasis, hepatitis A, viral enteritis, and other diarrheal diseases.⁶ There are many different types of microbes in wastewater, which makes it challenging to determine specific causes of illness. Detecting and identifying microbes in wastewater takes time and resources.⁷ However, it is well known that exposure to untreated waste negatively affects residents' health and well-being.

Investing in adequate wastewater infrastructure creates a healthier environment for the residents in Mound Bayou. Children can play outdoors, residents do not have to worry about their families and pets encountering raw sewage, household plumbing is more functional, and sewage odors are not persistently present. Well-maintained and properly built wastewater treatment systems protect residents from viruses and bacteria. They also reduce environmental pollution, function during rain and storms, and provide a foundation for economic development.

4 <https://www.rd.usda.gov/programs-services/rd-apply>

5 <https://www.rd.usda.gov/programs-services/water-environmental-programs>

6 World Health Organization. (2006). WHO guidelines for the safe use of wastewater, excreta and greywater (Vol. 2). <https://www.who.int/publications/i/item/9241546832>

7 Kaushal, S., & Singh, J.S. (2017). Wastewater impact on human health and microorganism-mediated remediation and treatment through technologies. In J. Singh & G. Seneviratne (Eds.), *Agro-environmental sustainability*. Springer. https://doi.org/10.1007/978-3-319-49727-3_12

Economic Impact of Wastewater Infrastructure Investment

Developing wastewater systems can bring economic benefits and jobs for communities. The *Economic Benefits of Investing in Water Infrastructure* study, commissioned by the Value of Water Campaign and completed by the U.S. Water Alliance in 2017, found that for every \$1 million spent on infrastructure construction, over 15 jobs are generated. City leaders in Mound Bayou will want to consider school apprenticeship programs and other local workforce development programs, including local water or construction-related skills, to create local employment opportunities for residents once construction-related activities begin.

Infrastructure can provide a strong foundation for the community through improved wastewater treatment and health services. The City of Mound Bayou's history and proximity to larger cities, including Clarksdale and Memphis, should make it an attractive location for commercial and industrial businesses. New businesses can bring jobs to reduce the number of residents who have to commute out of Mound Bayou and Bolivar County for work. Gravity sewer and centralized treatment are the most flexible wastewater systems for economic development. Community systems can also be attractive to prospective businesses if the system design accounts for the expected flow.

Option 1 in this document would expand the centralized sewer system to take on 34 additional homes. In addition, the sewer system would be expanded to provide services to the 16 vacant lots platted for development. This expansion would support new residential and commercial development. New homes constructed on the vacant lots would be able to connect to the centralized system, which would facilitate needed community growth. It is important to choose a system that reflects the community's current and future needs and goals.

Mound Bayou agreed to proceed with Option 1 at a public meeting on August 1, 2023.

Impact of Economic Growth on Monthly Rates

In Option 1, centralized sewer services will be extended to 34 homes in the Dunlap community. Mound Bayou's current sewer service rate structure includes a monthly fee of \$15 for residential customers residing outside Mound Bayou city limits. At present, no sewer connection fee is charged to new customers or connections. A rate study has been completed for the city, but this study provided insufficient information for city officials to decide on any rate increases. Technical assistance provider Communities Unlimited has offered to conduct another rate analysis for the city. This analysis would assist the city with establishing an equitable rate structure based on income and the increased number of connections.

Sustaining the Investment Through Operations and Maintenance

Mound Bayou will act as the funding applicant for wastewater infrastructure upgrades for the Dunlap community.

Potential Approaches for O&M

It is important that the option selected to serve the Dunlap community is both sustainable and prevents future concerns with raw or partially treated sewage ponding within the community. Factors to consider for long-term sustainability include:

- Ability of the residents to pay monthly O&M charges and any debt service associated with a loan needed to fund infrastructure improvements. As noted in Table 2, the monthly O&M for Option 1 (new centralized system and connection to Mound Bayou existing system) is approximately \$15 and Option 2 (replacement of onsite systems and establishment or enhancement of wastewater oversight authority) is approximately \$50. Option 1 is a more affordable option for customers.
- Ability to maintain all infrastructure to provide continued, reliable service and prevent both public and environmental health risks. For Option 1, Mound Bayou will be responsible for the wastewater system. The city's utility has trained, experienced staff to maintain its system. The city can provide long-term wastewater services as an existing well-established municipal government.

Option 2 presents challenges with respect to long-term sustainability since there is no existing entity providing oversight services for onsite systems. As previously mentioned, a new authority would need to be created to apply for and receive funding, along with overseeing installation and future O&M of the onsite systems. The political will of the local government to create a new sewer authority, along with the timeframe for establishing one, are unknown.

Ensuring Proper Septic System Installation in Un-Sewered Areas of Bolivar County

Some “checks and balances” on permitting are needed to prevent future properties lacking functional sanitation in un-sewered areas of Bolivar County. Other counties in Mississippi have developed a partnership with MSDH to ensure that building permits and electrical service are not issued without state approval. Example ordinance language from Madison County, Mississippi, is in Appendix B.

Paying for O&M and the Affordability Challenge

Across the United States, utilities use sewer bill revenues to pay for management, O&M, and loan repayments for wastewater systems. The City of Mound Bayou will need to do the same and undergo a rate study to determine the appropriate rate for wastewater services. The city or another management entity will need to keep rates affordable for low-income customers but high enough to collect funds to operate and maintain the wastewater system. This challenge is a key obstacle for utilities across the United States. Traditionally, wastewater-only projects are considered “affordable” if the sewer bill is 2 percent of MHI or less.

The typical approach to determining a system's affordability is to determine the annual cost for wastewater services as a percentage of the annual MHI of a community. For Mound Bayou, a monthly wastewater O&M fee of \$15 per month (current rate assessed by Mound Bayou for customers outside the city limits) would represent approximately 0.9 percent of the median monthly household income, assuming Mound Bayou and Dunlap residents have an MHI of approximately \$21,000 per year. Although a monthly rate of \$15 might be affordable for some residents, a portion of the population has an income less than \$21,000 per year and would, by this definition, experience hardship in paying \$15 per month. Any amount above \$15 per month for wastewater services would almost certainly represent a financial hardship for residents; thus, the preferred funding strategy is one that uses all grants or forgivable loans to fund all improvements.

The challenge in using MHI as the benchmark for affordability is that, by definition, half of households would be cost-burdened by a rate “affordable” at the median level. The 2023 EPA *Clean Water Act Financial Capability Assessment Guidance* suggests that the lowest quintile (20 percent) income level for service area households be factored into the equation. This guidance was developed to help enforce compliance with the Clean Water Act. EPA’s guidance notes that it is best to use the lowest quintile when applying it to systems with more than 3,000 connections. There is currently not an equivalent formula for small communities where the MHI is below the U.S. poverty level, as is the case for Mound Bayou and the Dunlap community. Therefore, an overview of the impact of a monthly rate at various household income levels could help with evaluating the percentage of income that would be spent on different wastewater infrastructure systems for only O&M costs. These evaluations can be further developed for the Dunlap community and Mound Bayou once the baseline rate assessment is complete.

Table 3 gives an overview of the impact of monthly sewer rates to households under Option 1 at various incomes and under various funding scenarios, assuming the current monthly O&M charge of \$15 (which does not include any loan repayment for infrastructure improvements). The highest income level was not included since affordability needs focus on the lower income brackets. Table 3 evaluates the percent of income that would be spent on supporting the sewer expansion into the Dunlap community. Table 4 compares the Mound Bayou population to Bolivar County. The tables show that the costs exceed the “high-impact” threshold of 2 percent in both funding scenarios where a portion of the funding is issued as a loan.

Table 3. Percent of Household Income Spent on Sewer Rates (Option 1) in Mound Bayou, Mississippi (Considering O&M Costs Under Three Funding Scenarios^a)

Income Bracket	Estimated Monthly Bill	First Income Upper Limits	Second Income Upper Limits	Third Income Upper Limits	Fourth Income Upper Limits	MHI	Poverty Level
Percent of Mound Bayou Households in Income Bracket		0%–20%	20%–40%	40%–60%	60%–80%		53.9%
Annual Household Income		\$9,572	\$13,593	\$26,439	\$41,730	\$20,833	\$21,960
100% grant/ forgivable loan	\$15	1.9%	1.3%	0.7%	0.4%	0.8%	0.8%
80% forgivable loan + 20% MDEQ WPCRLF loan	\$19	2.4%	1.7%	0.9%	0.5%	1.0%	1.0%
75% grant + 25% USDA-RD loan	\$19	2.4%	1.6%	0.8%	0.5%	1.0%	1.0%

 Greater than 2% of MHI considered “high impact” to households based on the 2023 EPA *Clean Water Act Financial Capability Assessment Guidance* focused on Clean Water Act compliance cases.

^a Assumes \$15 per month O&M charge.

Table 4: Percent of Household Income Spent on Sewer Rates (Option 1) in Bolivar County, Mississippi (Considering O&M Costs Under Three Funding Scenarios^a)

Income Bracket	Estimated Monthly Bill	First Income Upper Limits	Second Income Upper Limits	Third Income Upper Limits	Fourth Income Upper Limits	MHI	Poverty Level
Percent of Bolivar County Households in Income Bracket		0%–20%	20%–40%	40%–60%	60%–80%		33%
Annual Household Income		\$12,120	\$25,732	\$44,538	\$92,943	\$32,500	\$21,960
100% grant/ forgivable loan	\$15	1.5%	0.7%	0.4%	0.2%	0.6%	0.8%
80% grant/ forgivable loan + 20% MDEQ WPCRLF loan	\$19	1.9%	0.9%	0.5%	0.2%	0.7%	1.0%
75% grant + 25% USDA-RD loan	\$19	1.9%	0.8%	0.5%	0.2%	0.7%	1.0%

 Greater than 2% of MHI considered “high impact” to households based on the 2023 EPA *Clean Water Act Financial Capability Assessment Guidance* focused on Clean Water Act compliance cases.

^a Assumes \$15 per month O&M charge.

Each funding agency uses specific criteria to determine if a project applicant is “disadvantaged” and then uses these criteria to determine how to award subsidies or grant funding. MDEQ WPCRLF deems projects eligible for subsidy if the project area population is 4,000 people or fewer and the MHI is \$40,000 or less. Mound Bayou as the funding applicant meets both criteria and is eligible to be awarded a subsidy for the proposed project.

Addressing the Affordability Challenge

It is possible to lower the financial burden of these investments, especially for low-income households. Some local communities and states are developing affordability programs to provide rate assistance to low-income customers. The Low Income Household Water Assistance Program, created in response to the COVID-19 pandemic, was the first program of its kind in the United States, but it is only authorized by Congress through 2024. It is unclear whether Congress or the State of Mississippi will continue this program.

The City of Mound Bayou, like other local governments and utilities, can build local affordability programs by charging different rates to commercial accounts, new customers, or other customer bases that incorporate funding for a local affordability program. Using different rates creates a pot of money to help other customers during times of need. Customers who have a temporary medical issue or qualify for assistance based on income

Key Takeaways on Affordability

All wastewater treatment options have a high financial impact on the lowest income residents of Dunlap and Mound Bayou. **Rate assistance programs may be necessary for some households in Mound Bayou.**

Loan repayments will cause any option to have a financial impact on residents of Mound Bayou and Dunlap. The City of Mound Bayou will need to work with the funding agencies to **maximize the amount of grants** for constructing their wastewater system.

Economic growth can lower monthly costs of central treatment systems; therefore, **the community should carefully weigh multiple factors in deciding on a system.**

guidelines can take advantage of this rate structure to pay for water and wastewater services. However, this solution might not work for smaller communities without many commercial accounts or residents who can pay extra to fund the program.

The City of Mound Bayou will need multiple approaches to address the financial burden of water utilities for low-income residents, beyond just the programs discussed above. For example, Mound Bayou could consider non-rate revenue opportunities such as leasing space on water towers or offering non-traditional services. These services could include providing construction services for new utilities connection projects and charging for the time, although this method would require contract documents with the private sector.

Partners and Roles

The path to clean water is not an easy one. The City of Mound Bayou has options to choose from when it comes to new wastewater systems. Many partners in this pilot program will continue to support Mound Bayou along this journey (Figure 5), including:

- **U.S. Department of Agriculture Rural Development (USDA-RD).** Lead agency (with EPA) providing jointly leveraged technical assistance resources in this pilot program. Funding partner.
- **U.S. Environmental Protection Agency (EPA) Headquarters and Region 4.** Lead agency (with USDA) providing jointly leveraged technical assistance resources in this pilot program.
- **Bolivar County.** Pilot project applicant providing support to Mound Bayou and the project team as options are identified.
- **Mississippi Department of Environmental Quality (MDEQ).** State agency overseeing the CWSRF program and the environmental permitting authority.
- **Mississippi State Department of Health (MSDH).** Permitting authority for onsite systems and state agency overseeing Drinking Water State Revolving Fund (DWSRF) program.
- **Communities Unlimited.** Technical assistance provider with utility financial experience and funder connections. Their staff can ensure this project and Mound Bayou's team are networked to federal, state, and regional financial resources.
- **Cook Coggin Engineers.** A Mississippi engineering firm working with Mound Bayou to finalize the wastewater facility plan, including the Dunlap project, and prepare/submit funding applications.

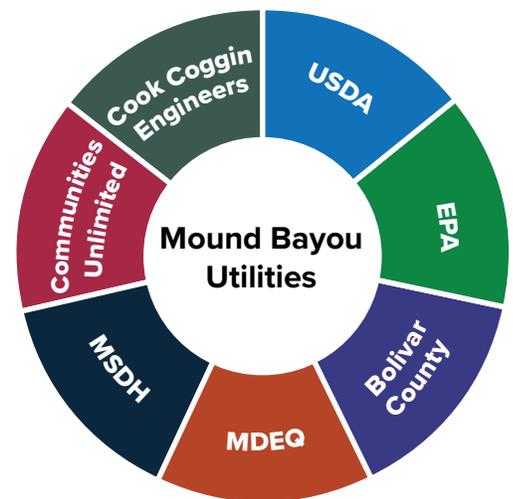


Figure 5. Partners to Mound Bayou.

Technical Assistance and Support for Mound Bayou Moving Forward

Both EPA and USDA-RD fund technical assistance programs that support small, rural, and overburdened communities and help them navigate the MDEQ WPCRLF, DWSRF, and USDA-RD funding programs. The ultimate goals of the technical assistance programs are to help communities identify water challenges and solutions, build capacity to address those needs, and develop application materials to access water infrastructure funding. Technical assistance providers can help the City of Mound Bayou understand the funding available through the MDEQ WPCRLF, DWSRF, and USDA-RD programs, as well as deadlines and application requirements. **EPA WaterTA and USDA-RD technical assistance providers can also help prepare and submit funding applications.** These providers can offer advice as communities consider infrastructure options, financing, and rate structures. Their connections with EPA and USDA-RD can help communities successfully complete projects and programs. Other technical assistance support for Mound Bayou can include:

- **Completing the audit of financial statements.** Communities Unlimited can assist Mound Bayou in working with federal funding agencies to assemble financial information and submit funding applications.
- **Completing a rate study for Mound Bayou utilities.** Mound Bayou will need to undergo a new rate study to better understand the impacts of monthly sewer rates to the citizens of Mound Bayou and the Dunlap community. Technical assistance providers such as Communities Unlimited have the capacity to complete a rate study for the city.
- **Completing the Wastewater Facility Plan and including the Dunlap project.** Cook Coggin is under contract to the city and working on the Facility Plan.
- **Submitting MDEQ WPCRLF and USDA-RD funding applications.** Cook Coggin submitted a Request for Ranking form and the wastewater facility plan to MDEQ, and Mound Bayou is eligible to submit the full MDEQ WPCRLF funding application. Mound Bayou is working on financial audits so it can apply for USDA-RD funding.
- **Considering the options for establishing and implementing a temporary public health abatement program.** Planning should continue to explore temporary solutions prior to a sewer line being constructed. Establishing the legal framework for a temporary abatement program would likely require action by the Bolivar County Board of Supervisors. Funding options would need to be explored as well, potentially from philanthropic organizations or regional banks.
- **Supporting workforce development and staff training.** Mound Bayou utilities will need additional operations staff to operate and maintain the new sewer main, force main, and lift station that will serve the Dunlap community. The technical assistance providers have staff training programs available if Mound Bayou needs assistance.

More information is available on EPA's WaterTA website.⁸

Road Map for Implementation

The Mayor and Board of Aldermen of the City of Mound Bayou are addressing Mound Bayou's and Dunlap's wastewater and water treatment needs, but this is just the beginning of a process to meet short- and long-term community needs. Developing any wastewater infrastructure takes time. Construction of a sewer extension is projected to finish in 2026, while creating a holistic program to address septic system needs throughout Bolivar County could take 2 or more years. These issues are not easy to resolve, but the effort is worthwhile for the future of the community. Now is the best time in decades to act, as the Bipartisan Infrastructure Law funds add a financial boost to water infrastructure programs across the United States.

⁸ <http://www.epa.gov/waterta>

Immediate Next Steps Ongoing Through 2024

On August 1, 2023, the Mound Bayou Board of Aldermen approved a contract authorizing the engineering firm of Cook Coggin to proceed with Option 1, a new centralized system and connection to Mound Bayou's existing system. The formal engineering process to extend sewer service to the Dunlap community is already underway, thanks to the commitment, partnership, and teamwork of the parties involved in this effort. Figure 6 displays a graphic schedule of the anticipated timeframes for developing a sewer line extension and implementing temporary abatement measures.

The next steps for Mound Bayou are to obtain MDEQ approval of the submitted wastewater facility plan and submit the MDEQ WPCRLF application for construction funding. Mound Bayou may pursue a USDA-RD SEARCH grant to assist with finalizing the wastewater facility plan and other preliminary engineering efforts. Mound Bayou needs 1 year of audited financials to apply for the SEARCH grant and is currently working on the audit.

Potential Timeline for Installing the Centralized Sewer System

The city plans to apply to MDEQ WPCRLF for funding and may also submit to other funding agencies. Figure 6 shows a plan of action, which would include:

1. Applying for design and construction funding from MDEQ WPCRLF and USDA-RD (this requires 3 years of audited financials for the water and sewer funds) in early 2024.
2. Completing environmental and cultural reviews.
3. Completing engineering design and bid documents.
4. Acquiring land for the new lift station and sewer easements, which usually happens at the same time as design and permitting.
5. Completing the MDEQ review process of the final design.
6. Advertising, opening, and awarding a construction contract (i.e., the bid process).
7. Constructing the system, which could begin in late 2025 but would continue through 2026.

Potential Timeline for Public Health Abatement Measures

If the City of Mound Bayou can meet the timeline outlined above, Dunlap residents could expect to connect to the centralized sewer system in late 2026. However, there is an urgent need to address the public health risk posed by the failing onsite systems on Dunlap properties. USDA-RD and MDEQ WPCRLF funding programs are not able to fund the interim abatement measures needed to ensure Dunlap residents are not exposed to wastewater until the sewer extension is completed. As outlined in Figure 6, the first step identified by the team is to contact foundations or community-based financing sources that could provide the roughly \$100,000 investment needed to complete the needed abatement measures. Funding may also be needed to cover project costs that most likely are not eligible under MDEQ WPCRLF programs, such as:

- Abandoning onsite systems once the centralized sewer system is installed and homes are connected.
- Remediating contaminated soils due to prolonged exposure to raw or partially treated wastewater.
- Purchasing easements or rights-of-way.

After identifying the funding source, the city would develop a framework of agreements and easements for installing temporary tanks on properties. Ideally, tank installations would begin as soon as funds are secured; realistically, tank and temporary piping installations can be expected to continue until late 2024.

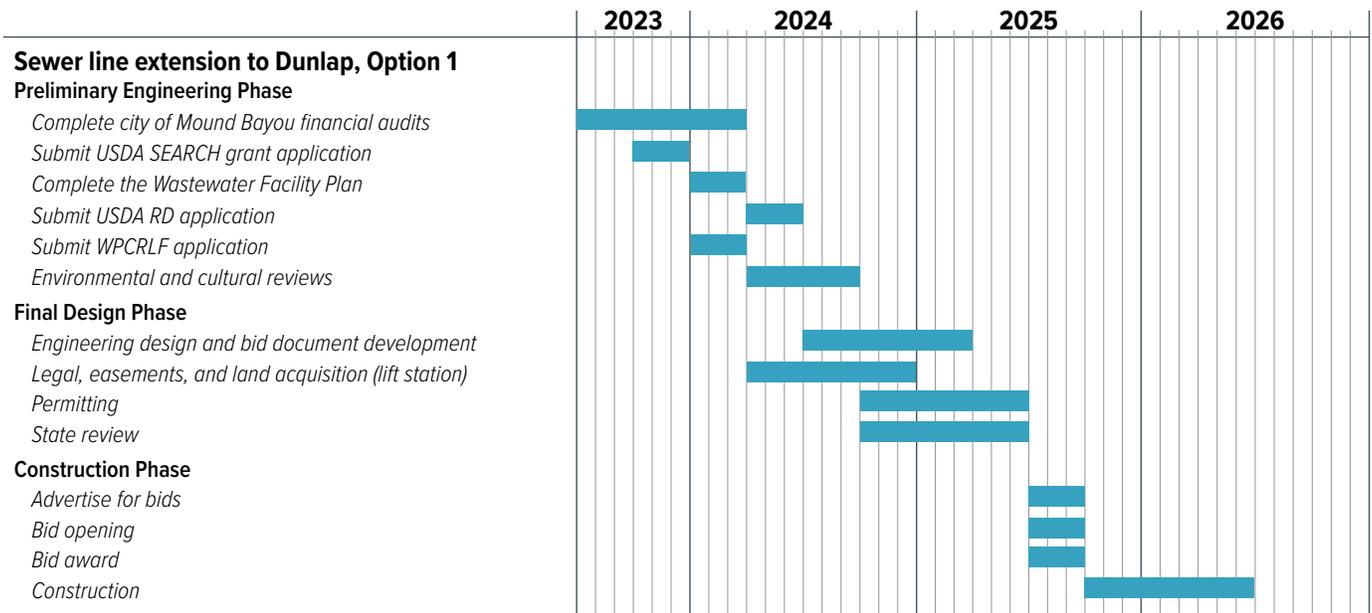


Figure 6. Potential timeline for project completion.

Concluding Thoughts

As Mound Bayou moves forward with an in-depth analysis of its options for wastewater service, EPA and USDA-RD staff and technical assistance providers are ready to support the community with funding opportunities through the Bipartisan Infrastructure Law. This is a historic time for water infrastructure funding for small, rural communities such as Mound Bayou and Dunlap. New funding can help these communities address their current and persistent health challenges and build a prosperous future.

Definitions

The following definitions are based on current Mississippi regulations.

- **Advanced treatment system.** A treatment component that utilizes oxygen to degrade or decompose wastewater.
- **Individual onsite wastewater disposal system (IOWDS).** A sewage treatment and effluent disposal system that does not discharge into waters of the state, that serves only one (1) legal tract, that accepts only residential waste and similar waste streams maintained on the property of the generator, and that is designed and installed in accordance with the law and regulations of the Board of Health.
- **Decentralized wastewater treatment system.** An IOWDS and/or cluster wastewater disposal system used to treat, disperse, or discharge small volumes of wastewater, generally from dwellings and businesses that are located relatively close together. Decentralized systems in a particular management area or jurisdiction are managed by a common management entity or may be used by a commercial development consisting of fewer than ten (10) lots.
- **Collector sewer.** The common lateral sewers, within a publicly owned treatment system, which are primarily installed to receive wastewater directly from facilities which convey wastewater from individual systems, or from private property.
- **Treatment works.** Any devices and systems which are used in the storage, treatment, recycling, and reclamation of waste or which are necessary to recycle or reuse water at the most economical cost over the estimated life of the works, including intercepting sewers, outfall sewers, sewage collection systems, pumping, power, and other equipment and their appurtenances; extensions, improvements, remodeling, additions, and alterations thereof; elements essential to provide a reliable recycled supply such as standby treatment units and clear well facilities; and any works, including site acquisition of the land that will be an integral part of, or used in connection with, the treatment process (including land used for the storage of treated water in land treatment systems prior to land application) or is used for ultimate disposal of residues resulting from such treatment; and any plant, disposal field, lagoon, canal, incinerator or other facilities installed for the purpose of treating, neutralizing or stabilizing wastewater or nonpoint source pollution or facilities to provide for the collection, control and disposal of wastewater or nonpoint source pollution.

Appendix A: Interim Solution Approach

Through the Closing America's Wastewater Access Gap Community Initiative, there are numerous options for temporary abatement of the ponding sewage on Dunlap properties that could be allowed in a manner consistent with effective permitting and enforcement procedures. One example of such an approach is from the Tri-City Regional Sanitary District in Gila County, Arizona. The intent of this permitting structure, known as the "Limp Along Permit," is to reduce the potential for public health and environmental impacts in a manner that reflects the community's commitment to providing sewer service and the financial limitations of affected property owners. The draft permit issued by Gila County is intended to authorize pumping, maintenance, and repairs to otherwise nonconforming onsite systems while a regional sewer system is constructed.

The following is a general framework for allowing interim measures, along with suggested regulatory or permit provisions relevant to Bolivar County and the Dunlap community:

1. **All properties must connect to a new sanitary sewer as soon as the service connection is available.** Failure to connect presumably would be remedied by Bolivar County or by the City of Mound Bayou through its utility, with a lien placed on the property for the cost of connection and any penalty.
2. **Onsite systems must be pumped or otherwise modified to ensure effluent does not pool on the ground surface.** Gila County provides a list of options, such as replacing broken lids or leaking tanks, installing watertight tanks with float markers to indicate when pumping is needed, and replacing pits with leach lines and pump-out ports. Mound Bayou and Bolivar County could draw on resources such as MSDH and Mississippi State University to determine a set of remedial measures appropriate to the Dunlap community.
3. **A signed, notarized Statement of Understanding must be recorded with the deed of each subject property, stating that the fixes implemented are acknowledged to be temporary and should be null and void as soon as either (a) a sewer connection is available, or (b) a fully compliant new onsite system is installed on the property.** While the City of Mound Bayou might be the most appropriate party to prepare a Statement of Understanding, since its sewer system would be extended to serve the unincorporated Dunlap community, deed recording would be with Bolivar County.
4. **A statement from the sewer utility listing the property owner's financial and legal obligations and the expected timeframe for sewer service must be provided to each property owner.** The statement then must be signed by the property owner, notarized, and kept on file with the utility to indicate the property owner understands their obligations.

For the Dunlap community, numerous immediate repairs and actions could be taken under this framework. A regular program of site visits, pumping, and repairs, with modest investments in tanks where necessary and appropriate, would reduce the potential for hazards while the Mound Bayou sewer line extension goes through engineering, permitting, and construction.

Appendix B: Example from Madison County, Mississippi

To prevent future situations similar to the Dunlap community, where homes are occupied in the absence of an MSDH-permitted onsite system, the Madison County, Mississippi model is offered here as an example. Bolivar County could adopt language into the existing land use ordinance (or another ordinance) that states a mobile home or residence cannot lawfully be occupied until the appropriate onsite permits are received from MSDH. It is considered a best practice and standard to prevent the occupancy of substandard (i.e., potentially dangerous) housing units through issuing and enforcing building codes and occupancy permits. Figures B1 and B2 display the permitting process implemented by Madison County to prevent occupancy of any dwellings prior to issuance of the MSDH onsite system permit.

How do I get approval for a Mobile Home?

1. The property must be zoned A-1 with a minimum requirement of 2 acres per dwelling. (Please verify zoning)
2. Please contact the Madison County E-911 office at (601) 859-4188 to obtain a physical address of the property. *NOTE: You will need to provide the printout of the address assigned by the E-911 office when applying for permit.*
3. Health department approval is **REQUIRED** and must be provided if public sewer services are **NOT** available.
 - Contact the Mississippi State Department of Health (MSDH) On-Site Wastewater at their toll-free call center 1-855-220-0192.
 - MSDH will provide the REQUIRED recommendation form (335) that is needed to proceed with the permit process.
 - MSDH will also provide the REQUIRED approval form (910) once installation of the septic system is complete. *NOTE: Electrical services cannot be released without the inclusion of this form.*
4. You must provide verification letter from property's water provider.
5. You will need to bring the following to obtain a mobile home permit:
 - Filed copy of the warranty deed. *NOTE: If applicant is placing home on land that they do not own, landowner must provide notarized letter granting permission for home placement.*
 - Title or bill of sale
 - Plot/site plan
 - Sewer recommendation / approval forms from Mississippi State Department of Health (MSDH)
 - Water provider verification letter
 - Mobile home permit fee \$150.00 (cash or check)
6. After permit is obtained, mobile home must be registered with the Madison County Tax Collector. (A registration number will be given at time of registration. This number is needed when applying for electrical services.)
7. In order to obtain electrical services, inspections must be completed from the MSDH, State Fire Marshall (601) 359-1061 and Madison County inspector. The homeowner must provide approval form (910) from MSDH to permit office before electrical services can be released.

MOBILE HOME PERMIT SUMMARY

1. Verify zoning and 2 acre requirement.
2. Apply for address.
3. Contact MSDH for sewer recommendation &/or approval.
4. Apply for permit – bring warranty deed (notarized letter, if needed), plot/site plan, address verification document, water verification letter and sewer recommendation form.
5. Register mobile home with Tax Collector's Office & pay taxes.
6. Complete (3) three inspections – sewer, State Fire Marshall and Madison County inspector.

Figure B1. Screenshot of the permitting process used by Madison County, Mississippi.

How do I obtain a residential building permit in Madison County?

1. Permits will only be issued to licensed contractors or property owners.
 - A current copy of the contractor's license *must* be provided.
 - A filed copy of the warranty deed is required if the structure is custom-built
2. Health department approval is **REQUIRED** and must be provided if public sewer services are **NOT** available.
 - Contact the Mississippi State Department of Health (MSDH) On-Site Wastewater at **1-855-220-0192** to obtain the **REQUIRED** recommendation form (335).
 - MSDH will also provide the **REQUIRED** approval form (910) once installation of the septic system is complete. *NOTE: Permanent electrical services cannot be released without the inclusion of this form.*
3. Submit two sets of plans that include the following: plot/site plan, foundation layout with the details, framing details w/ cross sections, electrical layout and front, side, and rear elevations. *NOTE: If the structure is in a subdivision that requires architectural approval from the homeowner's association, all plans must be approved prior to permit submission.*
4. Please contact the Madison County E-911 office at (601) 859-4188 to obtain a physical address of the property. *NOTE: You will need to provide the printout of the address assigned by the E-911 office when applying for permit.*
5. A verification letter from the property's water provider is required.

Figure B2. Screenshot of the permitting process used by Madison County, Mississippi.

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Limitations

Any systems and associated cost estimates discussed in this draft analysis are preliminary and not intended to serve in lieu of a Preliminary Engineering Report prepared by a professional engineer licensed in the relevant jurisdiction.

Alternatives have been developed at a high level with desktop tools and have not been informed by survey data or field reconnaissance work. Further field evaluation is needed to verify these alternatives in subsequent work following this assessment and solutions plan.

Treatment and dispersal systems designed by licensed design professionals are based on soil evaluations, flood elevation evaluations and variances, permitted discharge limit determinations, and unforeseen factors that cannot be determined without onsite field surveys and evaluations beyond the scope of this draft assessment.